PERSONAS IN THE DESIGN PROCESS:
A TOOL FOR UNDERSTANDING OTHERS

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PERSONAS IN THE DESIGN PROCESS:
A TOOL FOR UNDERSTANDING OTHERS

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SUMMARY

Personas, fictional user profiles based on research data, have gained popularity in the design field over recent years. These profiles include names, personalities, behaviors, and goals that are representative of a unique group of individuals. This paper examines the creation and utilization of personas as a tool for understanding others, specifically within the context of product design. A review of current literature revealed published methods for creating and using personas, along with the challenges and benefits associated with this tool. Current design industry practices were investigated through 15 semi-structured interviews with design professionals. Topics included persona creation and implementation, the tool's use, and perceived outcomes from the inclusion of personas in the design process. Participatory research examined persona creation methods including user data collection and the selection of topics to be included in these profiles. Additionally, persona utilization was investigated through the tool's integration into a 12-week Industrial Design student project. Observations and interviews with 8 student groups and instructors revealed the tool's impact on the design process and potential within the educational environment, with specific attention being paid to universal design applications.

CHAPTER 1: INTRODUCTION

While at the Georgia Institute of Technology, much of my research and coursework focused on the needs of individuals with disabilities, assistive technology, and universal design. Initially, personas were investigated as an opportunity for designers to learn about the person behind a disability, in hopes that this understanding would result in products that were usable by both able-bodied and disabled individuals. After an initial investigation of the subject, however, additional research opportunities were identified within the field of persona creation, the tool's application, and the impact of coupling research data with empathy on user understanding.

Personas, a user representation tool introduced by Alan Cooper's 1999 book *The Inmates Are Running the Asylum*, first gained popularity in the software industry but quickly crossed over into other disciplines including industrial design [1]. Personas are fictional but representative user archetypes based on the behaviors, attitudes, and goals of target consumers and/or end users. Names, personalities, backgrounds, families, and images are often key components of these profiles. They are not intended to be an average of all users, but rather individual characters that embody key characteristics of a specific target group [2].

In the broadest sense, personas are a tool for understanding others. They facilitate a designer's understanding of the product's intended user by representing often complex research data in a simple, tangible format. The tool also promotes understanding within the design team by enhancing communication and creating a common language with which to discuss design decisions, user behavior, needs, and goals. These same

benefits offer increased understanding between designers and stakeholder groups that may include clients, users, marketers, and manufacturers.

At the time of the initial investigation of personas, much of the published research on the tool was the form of single case studies and few produced quantifiable results. A portion of this research attempted to gain a broader understanding of current practices within the design industry by interviewing numerous individuals across design disciplines about their use and perceptions of the tool. In addition, structured experiments investigating persona creation and utilization within the educational environment were conducted in an effort to more objectively evaluate the impact and value of personas on the design process.

Specifically, this thesis addresses the following research questions:

- How do personas create an understanding of and connection to a target user group while facilitating design decisions?
- Are currently published methodologies and utilization strategies the most appropriate application of personas?
- How do personas help others to understand special populations, including those with disabilities?

CHAPTER 2: METHODOLOGY

Research was conducted through four separate studies for this thesis. They include a review of current literature, interviews with design industry professionals to obtain data about current practices, an investigation of persona creation methods through participatory research, and an examination of persona utilization with industrial design undergraduate students. More detailed methods for each study can be found within the corresponding chapters and appendices.

2.1 Review of Current Literature Methodology

A review of current literature was conducted using available online databases, web search engines and published books in order to obtain information about the rationale behind personas, creation methods, and uses, in addition to previous research studies on the topic.

2.2 Design Industry Current Practices Methodology

Current persona practices in design were investigated through a series of semi-structured interviews with professionals in industrial design, user research, and interaction design. These interviews lasted approximately 60 minutes and covered topics such as persona creation and implementation, the tool's use, and perceived outcomes from their inclusion in the design process. Responses were compared across participants for trends, commonalities, and unique findings.

2.3 Persona Creation Methodology

Persona creation methods were studied through participatory research. Individuals from different genders and life stages were paired together and asked to interview each other

in order to obtain information for the foundation of a persona. Participants were then asked to create personas based on the lifestyle and background information of their partner and submit them to the researcher for analysis. Participants were also asked to verify their partner's persona creation in order to provide insight into the accuracy of the profiles. Interviews between participants were tape recorded so that the personas created could be compared to the information provided in the session, as well as to understand the approaches that people used to obtain this data.

2.4 Persona Utilization Methodology

Persona utilization was investigated through a study that followed industrial design undergraduate students through a 12 week project in which they used personas. Data was obtained through a review of project deliverables, observations of student presentations and communication, interviews with students and instructors, and a pre/post test focusing on design considerations for people with disabilities.

CHAPTER 3: REVIEW OF CURRENT LITERATURE

3.1 Purpose

The purpose of this review was to gain an understanding of the current body of knowledge associated with the persona tool. In addition to background information, published creation methodologies and utilization practices, information was obtained with regard to the benefits and drawbacks of this method for humanizing data. This information provides insight as to why personas are viewed by some as a successful tool for communication and also for enhancing understanding of the target user. In addition, it reveals why others feel apprehensive about the use of such a method. Supplementing these findings, this review will expose opportunities for future research in the area of fictional user representation.

3.2 Methodology

Information was obtained through several methods for this review. Databases including Compendex, ABI Inform, and PubMed were searched for articles using key words such as personas, user archetype, user representation, empathy, design for disability, universal design, and stereotypes. In addition, web searches were conducted using Google and Google Scholar search engines for similar key words which produced journal publications, presentations, blog content, corporate newsletters, and design industry articles. Literature was selected based on its relevancy and currency. In total 50 books and articles were reviewed for this study.

3.3 User Representation

3.3.1 Persona Background

While working on a project management software program in 1983, Alan Cooper interviewed several potential users. One of these interviewees, Kathy, formed the basis of his first 'persona.' He used play-acting, often pretending to be Kathy, as a way to solve complex design questions and to determine feature trade-offs. After becoming a consultant in 1990, Cooper recognized the need for and challenges associated with client communication. This prompted him to formalize personas as a means of communicating the benefits of his ideas. This was later augmented by the need to manage large amounts of qualitative interview data, and the realization that participants fell into a few distinct groups of users. The characteristics of these groups began to form the framework for a set of personas. The success of these personas was evident in the momentum and understanding they created within the design team and later by the product's success. He began to use personas on all of his projects, and over the years refined his technique. In 1999 Cooper published *The Inmates Are Running the Asylum* and introduced his user representation tool to the software industry [1].

Creating abstract representations of users, however, is not a new concept. Market segmentation has been used since the 1960's and other industries have made similar attempts to categorize their target audience over the years [3]. Cooper's personas, focusing on the user's goals and corresponding activity scenarios, were one of the first tools intended for design. He noted that designers frequently have an unclear understanding of the user, often skewed by unfounded assumptions or based on the preferences or skills of people similar to themselves [4]. As a result, personas were introduced as an attempt to enhance client and team member communication and promote project focus.

As Sanders explains, “We call people ‘consumers’, ‘users’, and ‘customers.’ But people only play these roles for small, often insignificant and not so positive portions of their lives. When we label them, it relegates them to minor roles. If we start referring to them as people, maybe we will begin to think of them as people” [5].

3.3.2 Additional Methods of Describing Users and Customers

While the focus of this paper is on personas, there are many other methods that have been used to characterize groups of people, especially in the marketing and software industries.

Market segmentation groups individuals in order to determine the types of consumers that are most likely to be receptive to a specific product or marketing effort. These definitions were presented by Jack Scissors’ in 1966 and further defined by Art Weinstein in 1988. Segments are typically classified by demographic and geographic variables such as age, sex, race, location, and lifestyle. Understanding why someone wants to purchase a product, however, is not the same as defining the product. While these representations based on quantitative data can be very detailed, they do not usually include goals and needs of an individual that are specific enough to make informed design decisions [2, 3].

Other marketing related consumer descriptions include Upshaw’s customer indivisualization model and Mello’s customer image statements. In customer indivisualization, two profiles of the consumer are used. The first consists of a descriptive profile of how the customer is viewed by others, including the researchers. The second, indivisualized profile, illustrates how the customer views him or herself within the context of the purchasing decision, and is often represented with first-person

dialog. Customer image statements aim to provide a clear image of the customer through customer research, but do not provide the in-depth level of detail of some other methods [3].

Target customer characterizations introduced by Moore in *Crossing the Chasm* aim to provide a comprehensive understanding of customers in the context of their work environment. These characterizations include a personal profile, job description, technical resources, day-in-the-life scenarios for before and after the product purchase, as well as the motivations behind the product's acquisition. User roles, on the other hand, are abstractions that are defined by the responsibilities of the role within the larger context of the environment, the interaction and behavioral characteristics associated with that role, and the criteria related to the support of the role. While user roles can be helpful in identifying some of the roles a persona may play, the roles themselves do not include personal details and engaging characteristics. User roles have also been used in contextual design where they are mapped along among each other, as well as with the systems or tools used by the person [3].

User profiles do not focus on the details that create unique characters, but may contain stories or images. Instead, they are meant to distil collected qualitative research data down into 'types' or 'classes' of users. User archetypes build on the concept of user classes and are similar to personas. In addition to the user class information, they may also include a description of the user, attributes, skills, goals, market size and characteristics, and activities [3].

3.3.3 Complimenting Other Research and User Representation Methods

While personas used independently can aid the design process, they can be very powerful when they are used in conjunction with other qualitative and quantitative user research methods [4]. Since childhood, people have connected and engaged with fictional characters through experiences such as reading books, watching movies, and role-playing. By utilizing this same type of connection, data obtained from other methods such as market research, ethnographic studies, usability tests, or prototypes can quickly be conveyed in a familiar way [6].

Market segmentation and personas can complement each other in the design and marketing of a product. While market segments recognize attitudes and purchasing habits through a quantitative breakdown of the market, personas identify potential usage patterns and motivations through a qualitative investigation of behaviors [2]. Although these tools are considered complimentary, marketing and product development teams often have different needs that require different persona characteristics. Product developers are generally interested in the end user, while marketers are focused primarily on the purchaser of the product. These two groups are not always the same. For example, a product may be designed for a young child as the primary user while it is marketed toward their parent for purchase. Additionally, market segmentation is traditionally formed around demographic and geographic similarities. Personas, however, represent a group of people that share a common set of goals and may consist of drastically different demographic or geographic characteristics [4, 6].

Observations provide critical data about a participant's current situation. And interviews, or other self reporting methods provide accurate information about the recent past or immediate future of the individual. Participatory research methods that encourage

participant involvement through the creation of artifacts may reveal valuable data rooted in the memories or dreams of participants. This information can then be reflected in the identification of a persona's motivations and goals [5].

Contextual design is used frequently in order to understand the job tasks, techniques, and motivations of a user, and consists of six stages. First, contextual inquiry is done to collect qualitative data by talking to individuals in the context of their work environment. This is followed by work modeling that aims to expand the knowledge of an individual's work structure which is fundamental for an entire customer population. Consolidation then creates a single representation of the work practice and is often done through affinity mapping and hierarchal diagramming. This is followed by work redesign, which develops a better way to work, and user environment design, which represents the entire system. Finally, mock-ups and user testing are then utilized to get feedback on rough designs [7]. Personas can compliment several steps of this process by creating project focus, using consolidated work models for communication, and by providing quick overviews of often complex data. Additionally, the data collected through contextual design can provide a foundation for persona creation and scenarios. This data can help to create in-depth descriptions of people, activities, values, and environments [4, 8, 9].

Scenarios are stories that focus on specific individuals and tasks, and the assumptions associated with them. They are most commonly used at the beginning of the design process in order to illustrate user needs, goals, and actions [3, 10]. Carroll emphasizes that scenarios should include the task context, activity, prior knowledge, reasoning, and experience. He uses seven methods to create users that can be categorized as reflections about actors, about goals, and about the organization [10]. Scenarios allow for multiple views or levels of description and promote stakeholder communication.

They also help designers to focus their attention on the activities and experiences of the potential user rather than their own interpretations of their skill [11]. Story boards, video taped plays, and persona walk-throughs have also been employed to add more dimension to the traditionally written narrative [4, 7, 12].

Although they typically include a setting, users with objectives, and a plot; scenarios do not usually include detailed character development. The ability to relate to the user as a character in the scenario is important, however, especially when the user's experiences are vastly different from the designer's. Personas can provide the foundation for the central character in these stories. In order to enhance this, the methods utilized in script writing for character development and story telling can be applied. For example, it is important to describe what can be seen, such as a smile, rather than an emotion, such as happiness. Additionally, it is advantageous to create a believable character whose actions are based on past experiences and traits, along with providing an understanding the motivations behind those events [10].

In film, the character should be established on the first page of the script in order to grab the reader's attention. A description that is limited in details or highlights only one aspect of a person can make the character feel anonymous. By considering the person's physiology (e.g. age, gender, appearance), sociology (e.g. occupation, lifestyle, hobbies), and psychology (e.g. ambition, attitude, sex life), a more rounded character can be developed [10]. While exaggerated character descriptions in scenarios may be easier for designers to relate to and remember, personas do not need to be as extreme or stereotyped. This is because a team typically engages with a persona over a longer period of time than they do with a character in a scenario. In effect, they get to know them as they would a real person, gaining a deeper understanding of the character [4].

Personas can also enhance role-playing, which enables people to explore situations from a different perspective. This method has been used to create an "expert informant." This is where a team member takes on the role of the persona and develops an in-depth knowledge of that character, thus serving as a resource for other teammates [13, 14].

Additionally, personas facilitate story telling. In Spool's research, team members were observed telling stories about how their persona's would tackle a problem. This story telling technique put information accuracy at risk, however, as stories can become distorted with each retelling. In order to prevent this, teams documented these stories along with the persona's information [13].

3.4 Persona Benefits

3.4.1 Adding Empathetic Focus

Norman believes that a major asset of personas is the establishment of an empathetic focus in the design process [3, 14]. This ability to empathize with people is provided by an understanding of what people feel, in other words a knowledge that cannot easily be expressed in words [5, 10].

Lawrence explains that the term empathy consists of two main components. Cognitive empathy is an "understanding and predicting [of] someone else's mental state." Effective empathy, on the other hand, is the "experiencing [of] an emotion as the result of someone else's mental state, that emotion having to be appropriate."

It is possible for a person to have an "intellectual or imaginative understanding of another's belief, desire, or an emotion." A belief can be described as the state of

accepting an idea as true, whereas emotions “cannot be fully appreciated by simply knowing what they are directed towards.” Unlike empathy, sympathy is the recognition of “another’s difficulties and being motivated to alleviate them” [15].

Two approaches to empathic reaction include the theory-theory approach and the simulation approach. The theory-theory model suggests that people use generalizations about how people reason, act, and decide to explain other’s behaviors and mentalities. The simulation approach, however, states that people attempt to mimic the state of mind of another by using their own thought process as a means of calculation and prediction. Lawrence identified a study that found that the parts of the brain that are activated when a person views a film of another talking about emotional events are similar to those activated areas when the person imitates or observes others emotional expressions. Another study found that “participants imagining and recalling their own emotional experience and someone else’s emotional experience activated the same brain areas” [15].

Empathy is a common experience for most individuals. While it is rarely a conscious effort, people use partial knowledge about others to anticipate actions and form expectations about the people around them. Engaging with fictional characters through television, movies, and novels, is a routine experience from a very early age. Method actors prepare for roles by interacting with people that are similar to the character that they will depict [4, 6]. Thus, it could be assumed when a designer is role playing the part of a persona, imagining that character, or watching a video of an interview may experience empathy for that individual or target user.

3.4.2 Enhancing Focus and Understanding

In the past, designers have attempted to accommodate the broadest possible market with their product; often by attempting to increase the functionality to meet many users' goals. Often, these attempts resulted in complicated or unmanageable products that failed to accommodate any single user [16]. If a design fails to accommodate today's customer, even the most loyal may turn to the competition. People are becoming more demanding consumers and using their voice and influence to get what they want in the marketplace [5, 17, 18].

Without a clear understanding of the user, it is nearly impossible to predict their goals and actions. Personas provide concrete representations of the needs and goals a team is designing for, in a format that is easier to use and remember than traditional lists of features or specifications. Personas create focus by identifying and understanding users, their activities, and what they need – or don't need in a design. Ideally, they should promote a clean, coherent design with strategic planning behind feature inclusion and exclusion so that the user can easily take advantage of the product's benefits. Additionally, personas provide continuity within the team in their approach to the design of product features or parts. This can result in a more consistent overall design or product line [8, 14, 16, 19].

Personas help people understand a problem or information space from a perspective other than their own. If this persona has well defined needs, goals, motivations, and behaviors, it can serve as a reference point for all of the designers involved in the process. Rather than attacking the problem from their own 'point' in the problem space, i.e. designing for themselves, team members can use the persona as a common foundation from which to design from [13] .

Additionally, personas can help to limit and frame a designer's choices, resulting in better design decisions. Too many options can make a person feel trapped or overwhelmed. Personas are specifically created to focus the attention on a specific target audience, thereby intentionally ignoring the needs and desires of every potential user and eliminating choices. But, by focusing on the goals that are specific to the persona, designers are likely to satisfy many users who have similar objectives [3, 4, 16]. As Carroll explains, "Designers must have constraints; there are just too many things that might be designed. Requirements, if they can be identified, are clearly the best source of constraints because they indicate what sort of design work is needed" [11].

3.4.3 Increasing Communication

Designers, engineers, managers, marketers, researchers, and users all have important contributions to make to the design process but often lack shared experiences, concepts, and perspectives. In essence, they lack a common ground on which to communicate. All of these individuals bring a conceptual framework to a project that is comprised of their own perspectives, values, methods, and assumptions. Conflicting frameworks can quickly lead to confusion and misunderstandings within a design team and alienate others, such as users, who are not familiar with the vocabulary of the product development process that results of educational or professional experience. A development of a common language or conceptual framework, Erickson argues, can help shift the discussion from the abstract to the concrete. It can help legitimize opinions and help stakeholders realize that their opinions are not idiosyncratic. This common language or framework may eventually become a natural part of the vocabulary for those involved, and disseminate itself to others not originally involved in the process. It may result in a shared, self sustaining system of beliefs and values [20].

Much of the available literature recognizes enhanced communication as one of, if not the greatest, strengths of personas. They have been implemented to engage users and designers while providing a shared basis for communication [6, 9]. Personas are an effective means of communicating a wide range of information to a broad audience, and require little expertise to deploy or interpret [4, 20]. They make it easier to be human-centered because discussing product features or presenting concepts in terms of a persona is much simpler than the typical technical language [9, 14]. Rather than the designer having to convince or explain often complex concepts to stakeholders, personas provide a tangible way of thinking of the customer and the opportunity for stakeholders to "see" the issues and user needs for themselves [7, 21].

While it would be ideal for every designer to be a part of user research data collection, this is not always possible. Time constraints, budgets, and the addition or replacement of team members over the course of a project, hinder opportunities for everyone involved to have this intimate interaction with end users. Personas can mimic this firsthand experience and understanding for those that did not have the opportunity to collect the data [8]. Rather than having to recount a long list of details and statistics, a persona's name and identity can stand for a whole body of knowledge [9]. And, once a team has become comfortable and familiar with a set of personas, new information can be easily communicated [4].

3.4.4 Preserving Privacy

Preservation of anonymity and privacy has also been cited as a benefit of personas. They provide an easy way for observations, quotes, behaviors, and medical information to be reported anonymously while still providing a seemingly real person to understand and empathize with.

McQuaid utilized personas in a library design project that relied heavily on user research. Because, by law, it was not permitted for researchers to interview customers, information was gathered through observations and speaking with librarians. Based on this data, personas were created that included general characteristics, the persona's current library experience, and probable goals. Primary personas were then used as characters to create narratives of their experience as they walked through different scenarios. In addition, storyboards were created based on separate user research (not the research used to create personas). In this case the storyboards were considered the most effective technique for eliciting empathy for customers where specialists were "walking a mile in the customer's shoes" and also the most effective for communicating customer needs and facilitating conversation between stakeholders. The narratives of select personas were also effective in eliciting empathy, however, but did not have the same effect with the communication and dialog. The inclusion of real people, pictures, and "voices" in the storyboards may have been responsible for this disparity, in addition to the visual nature of the presentation [22].

3.5 Persona Creation and Utilization

3.5.1 Recommended Creation Methods

Cooper emphasizes precision in persona creation in order to create believable characters that have a rich and detailed description captured by goals, rather than accuracy or identifying representative users [6, 10]. Additionally, he concentrates much of the persona creation effort in the initial stages of the design process and downplays the roles of ongoing data collection, verification, and usability engineering [4]. Because of this, Cooper's method is considered controversial by some; especially because personas are designed to replace actual users in a substantial part of the design process [19]. Since Cooper's introduction of personas in 1999, others have augmented his

process. Much of this has been done with the incorporation of quantitative data to supplement Cooper's method that relies heavily on qualitative information. Grudin and Pruitt's methodology focuses on accuracy rather than precision, and incorporates detailed ethnographic and usability data throughout the design process to not only create the initial personas but to then verify or update them. Sinha's method utilizes a statistical method to identify groups as a foundation for persona categorization [6].

While persona efforts have been done very quickly with little research time invested, the entire process has been reported by some to typically last between 1-2 months [23, 24]. Most published methods include similar steps: 1) set goals and identify potential users, 2) gather data, 3) analyze information and identify patterns, 4) build the persona, and 5) implement personas for use [3, 25, 26]. Ford noted several factors that affect the persona creation process including the size and diversity of the customer base, geographic behavioral and operational variables, the desired depth of knowledge that the company has as related to user behavior, and the desire to verify or test the personas [23].

In their recent book, *The Persona Lifecycle,* Pruitt and Adlin expanded on this general model and identified the following phases of the persona process [3]:

1. The persona family planning phase includes the research required before the creation of personas. This includes creating a 'core team' of people for the entire effort, an evaluation of the needs and problems within the organization and identification of where personas might help those concerns, and identification of data sources for persona research.

2. The persona conception and gestation phase includes the identification of the number of personas required, qualities that should be included in the personas, and the translation of raw data into usable personas.
3. The persona birth and maturation phase focuses on the introduction of the tools to the design team, as well as education associated with their proper use and required adjustments to the personas as the need for minor changes become apparent.
4. Persona adulthood focuses on the use of personas throughout the design and development process.
5. The persona lifetime achievement, reuse, and retirement phase looks at the effectiveness of the personas effort and the potential for their reuse on future projects.

3.5.1.1 Setting Goals and Identifying Potential Users

At the beginning of a persona development effort, it can be beneficial to set specific and attainable goals for the project. This can help to guide the rest of the process and provide a means for evaluation at its conclusion [3]. Once this has been done, potential segments should be identified for further exploration as a basis for the personas. Internal company and customer data, and current market research data including market segments and user groups can provide this initial information. The highest priority groups should then be supplemented with additional qualitative research [23-25].

3.5.1.2 Gathering Data

Ford advocates that personas should be based on real, qualitative data collected from actual users. In addition, they should not be based on one individual, rather a “set of characteristics found across many individuals” [23]. Ethnographic research provides

many valuable insights for persona foundations. Goodwin writes “Rather than asking users what they want, it is more effective to focus on what users do, what frustrates them, and what gives them satisfaction. By combining interview[s] with direct observation – preferably in the actual usage context, you can get a lot of data very quickly” [26].

If actual users aren’t available for observation, Olsen claims that other resources may provide valuable information about end users. These include: ‘user surrogates’ such as domain experts, trainers, and immediate supervisors; informants and interpreters including people from marketing, sales, customer/technical support, and documentation specialists; and indirect sources of information such as manuals (both created by companies and those made by customers), secondary data from logs or feedback forms for example, and artifacts created by customers to supplement what they are doing [27].

3.5.1.3 Analyze Information and Identify Patterns

Once data has been collected it should be processed in such a way that patterns in behaviors, beliefs, and goals can be identified. Goodwin recommends listing behavioral variables, or how interviewee behavior differed, from data collection sessions. Interviewees can then be mapped against each set of variables to identify clusters of users [26]. Ford also suggests looking for attitudinal patterns, contexts, and behaviors that create distinctions between groups [23]. These patterns or clusters that have been identified based on multiple variables such as similar usage patterns or backgrounds and the distinct differences between these clusters form the foundation for potential personas [25, 26]. Skeletons created by listing distinguishing data points for each group can then be prioritized and rounded out by adding individual details and narrative [3].

Sinha utilized a somewhat different method that aimed to produce a tighter correlation between user data and the resulting personas by introducing more quantitative methods into the process. Statistical analysis was used on questionnaire data to identify primary and secondary motivations in key areas for the personas being developed, which were then verified through user interviews [28].

3.5.1.4 Building Personas

There is a delicate balance between creating personas that are too vague to create product focus or to facilitate low-level feature trade-offs and creating personas that are too focused [29]. Goodwin advises against "writing novels," explaining that while personal details can be fun, too much biographical information can be distracting and take away from the tool's credibility. A persona should not simply be a list of tasks or duties, however. She recommends focusing on behavior patterns, goals, and environmental context before adding personality to the persona**.** For example, including three to four experience goals that examine how the persona would like to feel while using the product, rather than life goals that are only occasionally useful in the actual design, is often beneficial [26, 30]. Once data-driven characteristics have been incorporated, a limited number of personal details can be introduced, but these characteristics should be context appropriate or help to differentiate the persona [25, 30]. However, providing a name, quotes from the persona that help the designer 'hear' their voice, and thoughtfully selected photographs will help personas seem more like real people and thus evoke empathy from team members [25, 31]. Some recommend using stock photography or magazine photos, but others recommend using real photographs that aren't as polished to preserve the concept of the persona being an actual person. Personas my then be validated by reviewing them with those people that conducted the

research, continued user research within user segments, or by reviewing them with stakeholders [25].

Olsen provides detailed guidelines for the creation of a more “three dimensional” persona in his Toolkit. Much of this information focuses on the persona content. He explains that the persona’s background can include a geographic profile, demographic profile, and psychographic information. Also one should include a persona-business relationship description to identify how valuable a persona is to the business. It is also important to add information regarding the persona’s relationship to the product or business. This includes areas such as usage rate, loyalty, brand relationship, and the persona’s attitude toward the product. Next, a persona should contain specific goals, such as usage goals or big picture goals, motivations, needs, frustrations, and attitudes toward specific job tasks or technologies. Additionally, Olsen recommends including knowledge and proficiency characteristics that could include language abilities or skill level characterizations such as novice, advanced beginners, intermediates, and experts. Once the persona has been described as a ‘person,’ he advises focusing on the context of usage information such as the user’s role, surrounding environment, legal issues, and social and economic trends. Next, interaction and information characteristics of usage should be examined such as frequency, continuity, and intensity of use and the volume and complexity of information. This information can be helpful when designing at the ‘tactical level.’ Sensory and emotional characteristics of usage such as style, perceived brand personality, and product experience can help guide design decisions. Finally, Olsen recommends including accessibility issues and disability considerations in the profile [27].

3.5.1.5 Implementing Personas

Olsen prioritizes personas into the following categories: focal personas that are the primary users that must be accommodated, secondary personas which are comprised of additional users that should be accommodated if possible, unimportant personas that are low priority users, affected personas who can be described as non-users that are affected by the product, exclusionary personas who describe the people that are not being designed for, and stakeholder personas who represent the people that influence the product development process [29]. Olsen and Cooper both recommend identifying at least one primary persona, but no more than three. These personas should drive the design and reflect the group that is the most difficult to design for and must be satisfied [32, 33]. These designations can help to focus design, prevent feature creep, and facilitate feature trade-offs because the primary persona, the person that it is being designed for, has already been decided [34]. Eisenberg recommends against designing for a primary persona that is based on the average needs and goals of the target user, however. Instead he recommends creating divergent personas across the consumer base to cover a broader spectrum of needs and goals. He notes that "sometimes personas have identical motivations but dramatically different needs" [31].

For successful implementation, Freydenson recommends tying personas to user research, keeping dissemination materials simple but informative, communicating them as though they were real people, showing persona images often so that team members will recognize their faces, focusing on regular daily activities, using creative and multiple methods to communicate the persona [34]. Including instructions on how to use the personas and providing tools to aid this is also beneficial. Grudin and Pruitt supplemented the traditional personas with tools such as a feature-persona weighted priority matrix to facilitate feature trade-off decisions [24].

3.5.2 Assumption and Ad-Hoc Personas

Norman sees personas as a means for focus and an aid for communication. Therefore, he believes that they should be realistic, but not necessarily real or accurate. Thus, details included in a persona about personal and social aspects of their lives and extensive customer research might not be necessary. Rigorous ethnographic research methods might, instead, be successfully replaced by basing persona data off of the designer's own extensive experiences that identify key design criteria [14].

Pruitt and Adlin explain that when it is not possible to create data-driven personas, assumption-based personas may provide some of the same benefits by creating a common user description for team members to reference, and often with less effort than their counterparts. Assumption personas are used to describe the existing assumptions in the organization about the user population and can be beneficial before the data analysis phase of persona creation. Additionally, they may be helpful in targeting user research efforts and recruitment in order to confirm or invalidate current impressions. On the other hand, the creation of these personas may also validate the need for data-driven personas by highlighting the differences in understanding or assumptions that team members or stakeholders have about the user population [3].

Olsen utilized this method to successfully create personas for online customers at a large packaging company. Due to budget and time constraints, the company conducted workshops with employees that have frequent and direct contact with these customers rather than contacting the customers themselves. Their knowledge of customer needs, processes, and concerns was used as a substitute for traditional ethnographic data as a foundation for customer personas [21].

If the research is non-existent or insufficient, “provisional” personas may be created. Goodwin describes these as a “sketchy best guess at user needs and characters” that lack in detail and narrative. She emphasizes that all team members must be aware of the limitations of these “thought experiments” and that they are not actual data-driven personas. Adding, ‘”If every aspect of the description can’t be tied back to real data, its not a persona – it’s a creative writing project that should not be used for making critical design and business decisions” [26].

3.5.3 Characteristics of Successful Persona Efforts

There have been many reported instances of successful persona use. Through these descriptions, several strategies that may enhance the effectiveness of personas in the design process were identified.

A multidisciplinary team provides a powerful foundation for persona creation. These team members may include individuals from marketing, product management, engineering, user interaction design, user experience, and documentation writers [8]. Inclusion of multiple people from varying backgrounds can enhance creativity within the persona research, creation, and implementation process while reducing the impact of personal biases and assumptions on the tool [3, 5]. Grudin and Pruitt reported using twenty-two people in the Microsoft Window’s persona creation team, for example. Team members from various disciplines and departments were then assigned to focus on one of the six personas that were developed in the project. This method resulted in a feeling of ownership and facilitated the dissemination of the final personas across multiple groups [4].

The inclusion of individuals who will be doing the actual product design in the user research and persona creation process, is also an effective strategy [3]. This may help to convince team members of the accuracy of the personas because they have first hand knowledge of the data that is being used to form them. Being involved with the personas through all stages of their development and use also creates a more intimate relationship with them. For example, reviewing data during the information consolidation and persona creation process may bring back memories of the actual data collection periods [8].

While quantitative data typically forms the framework for market segmentation profiles and other customer representation formats, the success of personas relies heavily on the use of rich and relevant details based on qualitative information obtained from actual user research [3, 13, 23]. In the Microsoft Window's persona effort, market segmentation data was used to identify high priority groups for which to form potential personas. This data was then complemented with observations, interviews, and focus groups [4].

In order to supplement these often relatively brief profiles based on data from numerous people, Holtzblatt explained that they often will attach raw data such as video clips of the actual users to the persona descriptions. In doing this, the persona becomes a means of accessing and structuring the data [8]. Grudin and Pruitt reported the use of a "central foundation document" for each persona which served as a repository for the data, photos, reference materials, etc. associated with that character. In an effort to provide obvious links between the personas and the original data, these and other documents were made widely available to team members [4]. Rönkkö also utilized this strategy with some success [24].

Communicating user research in an engaging and meaningful way can prove to be a challenge, especially when the format is new to team members. The introduction of the Microsoft personas included a kick-off meeting, posters, handouts, and gimmick items. Personas were even given their own email addresses to send out information to the development team [4]. Others have utilized innovative methods such as loading screen savers on member's computers that displayed pictures, backgrounds, and stories of the personas being used [13].

3.5.4 Persona Challenges

Several challenges associated with the creation, implementation, and use of personas have also been revealed through available literature.

Although personas are noted for their simplicity, it is not always clear to team members how to actually use the tool. In Blomquist's study, no one in the project had worked with personas previously. And, although the personas were posted in prominent locations, Blomquist found that the project members hardly used them. When interviewed, the project manager and developers did not know who "Richard" or "Eric" were, in fact less than half of the team members knew the personas' names, but most did recognize their faces. In conversation they instead referred to "the user" or "you." The interaction designers, technical writer and localization specialist did know who they were, however. Because all members were not fully aware of who the personas were, discussion surrounding them and their needs was difficult in meetings. Scenarios played a greater role than personas did during the project development [19].

A lack of acceptance by team members or support from leadership can hinder persona efforts. Because designers are often biased toward using methods they have utilized

previously, even when they are aware of these limitations, personas become increasingly difficult to substantiate as time lapses between the project's commencement and persona introduction [11, 19]. Grudin and Pruitt found that because the MSN Explorer persona project took longer than anticipated, the tool was revealed after the basic design and specification phase had been completed. This introduction of a new concept at this stage was met with large amounts of resistance by team members [4]. Blomquist also observed similar sentiments as a result of a late persona introduction where team members had difficulty relating to the user representations [19, 35].

The issue of credibility and trustworthiness associated with personas has also influenced their acceptance and ultimate effectiveness. In Blomquist's study, personas were created by a behavioral specialist at the company based on interview and observational data which were then passed on to team members. Because members did not contribute to the creation of these tools, and the fact that they were built based on "pre-supposed rather than empirical data," they did not completely trust the personas. As a result, members had difficulty communicating personas to others because they did not feel completely confident in the method. He believed that, had members participated in the process, they would have obtained a "richer understanding of the users." That information could have been communicated to others with a clear knowledge of which persona characteristics were based on assumptions rather than data [19]. Grudin and Pruitt also reported a lack of confidence in early persona efforts because characters were not clearly based on data and methodology [4]. Rönkkö attempted to resolve these issues by integrating ethnographic and qualitative studies to provide an ample amount of depth and accuracy [24].

It has also been suggested that personas can be over used. The method has been rejected by some people because it replaces some actual user participation. Others believe that limiting this participation may be beneficial [9]. Grudin and Pruitt emphasize that it is important to avoid replacing other user research methods, data collection, or evaluation with personas [4]. Others, however, have reported successes with using personas as ad-hoc user evaluations, eliminating the need for costly and time consuming usability testing [35]. Understanding the challenges associated with reusing a persona is also important. While it may be tempting to over-extend their use after investing the effort in creating personas and getting familiar with the characters, it is generally recommended to use new, unique personas on new projects [4].

External forces such as market demands and technology forces can also hinder persona use [11]. Rönkkö demonstrated an instance where the application of personas to a mass market software development project failed because of telecommunication market forces. Personas were applied in the high level specifications of the software, but as the project progressed and feature trade-offs were made, these initial requirements were superseded by market and competition related issues. As he explained, "Telecommunications has a tradition of rapid development of new technology. It produces artifacts with potential usability, and not the other way around. Designing new, hot and advanced technical components for the mobile device has a higher priority than satisfying pre-identified user groups" [6]. Therefore, the use of personas may not be effective in rapidly developing/push product categories.

The need for more in-depth information regarding the creation of personas was also identified as a barrier to wide acceptance and usability of the tool. While there are several resources available that give an overview of the persona creation process, many

of these methods and materials are proprietary. Some have found it difficult to apply the recommended approaches without a clear understanding of best-practices for behavioral data interpretation, persona identification, and characteristic inclusion [4, 35]

3.6 Expanding Persona Application

3.6.1 Personas with Disabilities

US Census Bureau 2004 figures from state that 14.3% of the US population over the age of 5 has a disability, accounting for almost 38 million people. The likelihood of disability prevalence increases with age. The Bureau reports that 39.6% of individuals over 65 years of age (13.5 million) have at least one type of sensory, physical, mental disability. These numbers exclude those individuals that live in intuitions, college dormitories, and other group quarters [36].

With this large segment of the population, designers that only consider the needs of the "average" user are at risk of ignoring and excluding millions of potential customers [12]. It is easy for many able bodied people to ignore statistics and demographic data about these populations, or to assume that there are no users with disabilities for the product in question [17, 37]. And, as technological advances and feature expansion continue to take priority in many new designs, developing easy to use products is sometimes an overlooked element of the design process [12].

Convincing manufactures and designers that inclusive and universal design is a valuable effort can be a challenge in itself. As Muller noted, promoting these concepts requires the use of all possible approaches that are suitable for the audience and "effective and time-efficient methods are needed to persuade designers of the benefits of taking account of the needs of older and disabled people as an integral part of the design

process” [12]. He also explained that because organizations are apt to shy away from large cultural or ideological shifts, focusing universal design efforts on a small component or feature may prove to be more successful at first.

In his paper describing the findings from the Accessible Design in the Digital World 2005 Conference, Mueller describes several strategies for gathering input and insights from users with varying abilities and communicating this information to designers and other stakeholders in a meaningful way. It was noted that ergonomic guidelines for the disabled and elderly were some of the most useful and prevalent resources currently available. This type of information is widely available for people with mobility limitations, in addition to sensory impairments such as hearing and vision. Information focusing on cognitive limitations, however, is scarce. While these ergonomic guidelines provide technical specifications for designers and engineers to work with, other resources provide a means of creating and understanding of the market and its members. Market data focusing on the purchasing power of people with disabilities and the aging population is a valuable asset when presenting a business case for universal and inclusive design. Additionally, case studies have been effective in illustrating successful instances of universal/inclusive design within the corporate culture. Hands on exercises that reflect or simulate the disability experience, such as simulating low vision or limited dexterity, have been shown to be one of the most effective methods for eliciting understanding and action [12].

Personas may also be an effective means of communicating this information. By appealing to stakeholders with people with disabilities described as people first, rather than a statistic or list of functional limitations, this tool may provide a unique understanding of the market. And while the disabilities of these personas make them

distinctive, by providing other details about their lives it becomes evident that many of their needs, behaviors, and goals are the same as able-bodied individuals [17]. In order to accomplish this, a persona with a disability must include the same specific characteristics such as age and experience that traditional personas contain, but should also address accessibility concerns through a description of the limiting condition, assistive technologies used, and experience with relevant tools[38]. It is important, however, to create a believable persona that is not based on disability stereotypes.

Darke explains a stereotype as “a social construction which denies the truth of that which it represents by replacing it with an alternative which the stereotyper presumes to be true but which is, in reality, socially constructed. A stereotype does not inherently acknowledge that it is a social construct but passes itself off as a truth” [39]. Stereotypes reduce an entire population of persons into one group while eliminating the recognition of nuances or differences between those individuals. In order to avoid stereotyping, it is important to describe individuals (or personas) as people first, rather than simply defining them by their disability. In writing, stereotyped characters are successful when they are not intended to be deep or rounded individuals. They do not enable a true understanding of the user, however [10]. While an archetype is a similar construct, it differs from a stereotype in that it is based on information that is accepted as true by those who create, consume, and evaluate it [39].

People often make assumptions about the types of products a person with a disability may choose or need to use. Without knowing all of the potential reasons for interacting with the product or service, these assumptions are often wrong [37]. It is important for designers to remember that there is variability among people with disabilities including interaction techniques, adaptive strategies, assistive technologies, expectations, and

user preferences. Observations of many people with varying abilities interacting with the product should help to increase this understanding [38]. Alex Carmichael advocates “a balance between designing for individual needs (such as personas) and designing for a diverse user population.” He recognizes “the need for testing with real users and caution[s] against oversimplifying the diversity of user populations, e.g., recognizing the significant differences between design for users with low vision and users who are blind” [12].

There are few published persona efforts that include users with disabilities. Microsoft included accessibility information in their personas, but did not create a “full-on” disabled persona in their effort [4]. The User-Centered Design team of the Smart Internet Technology Cooperative Research Center reported successfully creating a persona with a disability for a software design project, finding that the use of this tool, along with scenarios, built communication between research teams [40]. Little information was given, however, on the design implications that were a result of this unique persona.

The Treasury Board of Canada Secretariat provides a Disability/Persona Matrix on its website to enhance accessibility to the Government of Canada’s Information Management/Information Technology systems. This matrix includes 10 personas with unique disabilities such as high spinal injury or blindness and their corresponding physical and/or cognitive limitations. By providing models with unique disabilities, a designer can seemingly develop for one persona and accommodate millions of individuals. If all personas are considered simultaneously, they hope, a full range of impairments will be accommodated [41, 42].

The Rehabilitation Engineering Research Center on Mobile Technologies for Persons with Disabilities (Wireless RERC) conducted a survey of user needs in 2001 to identify, among other things, the ergonomic requirements of users with disabilities. From this pool of participants, 10 focus groups were set up consisting of individuals with similar impairments. Because of confidentiality considerations, personas were developed as composites of some of these focus group participants and survey respondents in order to effectively share their insights. These personas provided a powerful way to share results of user research with designers and developers in the wireless technology community. Developers of the RERC personas anticipate that they will be used to help access prototype designs and as a recruitment guide for representative participants in research and evaluation sessions [38, 43].

3.6.2 Additional Persona Applications

In addition to the field of design, persona-like efforts have been used in many other applications as means to understand customers and end users, screen for research participants, promote discussion and educational opportunities, and even to provide online customer service.

Ford Motor Co. creates a persona-like character for every model in their line of vehicles. And recently, Organic, an online marketing agency for DaimlerChrysler, created persona rooms at their offices. These rooms aim to create the representative living spaces for typical Jeep, Dodge, and Chrysler vehicle customers. They have helped Chrysler and Organic employees empathize with and gain a deeper understanding of their target customers. Critical meetings are even held in the rooms in order to enhance this knowledge [44].

Personas have applications in other stages of the product development and production process as well, including technical writing and user documentation. They can assist in determining the primary and secondary audiences for technical support documents, prioritize writing tasks based on what is important to the readers, and to write in a way that helps users achieve their goals [45]. Microsoft used persona profiles as screeners for usability and market research recruitment. After the MSN and Windows persona creation effort, a panel consisting of 5,000 users was created who matched the persona profiles. Those members are polled on a regular basis and the information is used to gain a better understanding of activities, preferences, and opinions of those target groups. This data is categorized, analyzed, and reported by persona type and based on this information personas have been revised to more strongly identify with the characteristics of those users [4].

"Kids Like Us: Using Persona Dolls in the Classroom" by Trisha Whitney guides teachers on the use of persona dolls, dolls with their own name, family, history, and traits, for discussion of emotional issues and classroom situations [46]. Many occupational therapy educational programs utilize problem based learning strategies to explain complex situations or user needs. These strategies often include the use of scenarios and fictional users or persona-like characters [47]. These examples show that there is potential for personas in the educational setting.

Personal shopping and gift-giving websites such as personalshopper.com and findgift.com have employed persona-like methods in their recommendations to customers. Often they ask the customer general information about the person they are buying for such as age and gender, in addition to lifestyle information including hobbies and favorite colors. While some find it limiting, a Yahoo sponsored site asks users to

identify a lifestyle type such as “outdoorsy” or “technophile” [48]. This technique has also been used to direct consumers to a specifically tailored advertisement or webpage that fits their anticipated needs and goals. Figure 1 shows an example of this where American Express presents the potential consumer with three characters for self-identification in an online advertisement.

Figure 1: Online advertisement using persona-like self-identification [49]

3.7 Key Findings

Personas have quickly gained popularity within the design community since their 1999 introduction by Cooper. As representative fictional user archetypes, they can enhance the design process alone, but are a powerful tool when used in conjunction with other user research and representation tools. Personas can provide a quick, concrete method for conveying data obtained from other tools including market segmentation, participatory research, contextual design, and scenarios.

Several persona methods have been published over the years. Most authors emphasize the inclusion of qualitative and ethnographic data obtained from actual users when creating personas. Others have successfully utilized ad-hoc or assumption based personas that are based on little research to enhance communication and focus. Cooper stresses precision persona creation through the inclusion of rich details that cover the needs and goals of the user. Grudin and Pruitt believe that precision is important, but personas should also accurately portray the user and the market. They

integrate rigorous ethnographic and usability research throughout the design process to ensure this. Sinha incorporates statistical methods into his process in order to accurately identify persona groups.

The literature reveals that personas have the ability to establish empathetic focus in the design process and enhance project focus. Many believe that they provide concrete representations of data including needs and goals of the user in a form that is easy to remember and communicate to others. In addition, personas can help a designer to view a problem space from a perspective other than his own and provide limitations and constraints in which to design. Some believe that personas can effectively mimic firsthand research experience for individuals that did not take part in data collection. Others found that personas can be used to preserve the privacy of individuals when conducting research on sensitive topics or in restricted areas.

Several problems with personas were also identified. It is sometimes difficult for designers and researchers to understand how to successfully create and use personas. More in-depth, non-proprietary information is needed within the community to address this problem. Personas faced a lack of acceptance when they were introduced in the later stages of the design process or when there was limited enthusiasm from other team members or leadership.

A lack of trust in personas has also been reported, primarily due to a lack of a clear connection between the user representations and actual data from which they were based. When creating personas it has been recommended to use a multi-disciplinary team consisting of individuals that will actually be designing the product in order enhance creativity and provide firsthand knowledge about the data that was used to form

the profile. This, along with providing easy access to raw data for all team members to view may help to convince designers of the accuracy of their personas.

The potential for the use of personas in universal and accessible design, was also examined in this review. The tool may provide a powerful way for researchers or advocates to communicate the needs and goals of people with disabilities to designers and manufacturers. It is important, however, to refrain from relying on stereotypes for personas and to emphasize the variability among people with disabilities. Few studies have been published on this topic.

Personas and persona-like creations have been successfully utilized in other disciplines as well. These include unique marketing efforts, screening filters for user and usability research, use in educational settings, and online retail applications.

CHAPTER 4: DESGIN INDUSTRY CURRENT PRACTICES

4.1 Purpose

The purpose of these interviews was to gain an understanding of the current use of personas in the design process. While several papers have been published on this topic, few examined their use apart from the single case study that was being presented or presented information obtained from outside of the organization of the author. This study begins to objectively look at persona use throughout the industry by including multiple design professionals from varying backgrounds, job roles, and companies. Interview topics included persona creation and implementation, the tool's use, and perceived outcomes. Collected information was used to compare current approaches to and use of the tool, as well as the perceived effectiveness of the inclusion of personas in the design process.

4.2 Methodology

Professionals in industrial design, user research, and interaction design were recruited for this project between November 2005 and January 2006 through word of mouth and/or email contact. While industrial designers and design researchers were the original target group for this study, participants from other fields were included due to the relatively small community of persona users and nature of the word of mouth recruitment method. A semi-structured interview (See APPENDIX A for interview guides), lasting no more than 60 minutes, was conducted either in person or over the telephone with the researcher. Participants were made fully aware of the goals of the study and were assured that their responses would remain anonymous. After data collection, interview notes and audio tapes were transcribed and analyzed for themes among participants and unique insights.

4.3 Industry Interview Results

Formal interviews (n=15) were conducted from November 2005 to February 2006, with human factors professionals (n=1), usability researchers (n=1), industrial designers (n=2), interaction designers (n=1), and design researchers (n=10). Participants were self-employed consultants or employed at industrial design/design research consultancies (n=5), consumer electronic software and hardware manufacturers (n=7), and within design departments at large corporations (n=3). Data collection for in-person interviews (n=1) was done through audio-tape recording. Telephone interviews (n=14) were documented with hand-written notes from the interviewer. Session duration varied from 30 to 75 minutes. A guide was used for all interviews, but some topics deviated from this based on the participant's experiences and background.

Overall, the method of personas received mixed reviews from participants. Positive opinions of personas were given by eight (n=8) respondents, four (n=4) participants felt that personas had some benefit but they had an overall negative impression of the tool, and three (n=3) participants felt strongly against personas. No significant trends were observed between positive or negative persona perception and the length of time the participant had been familiar with the method. Likewise, no significant relationships were drawn between persona perception and industry type (software/interaction or product/hardware). Figure 2 represents these findings.

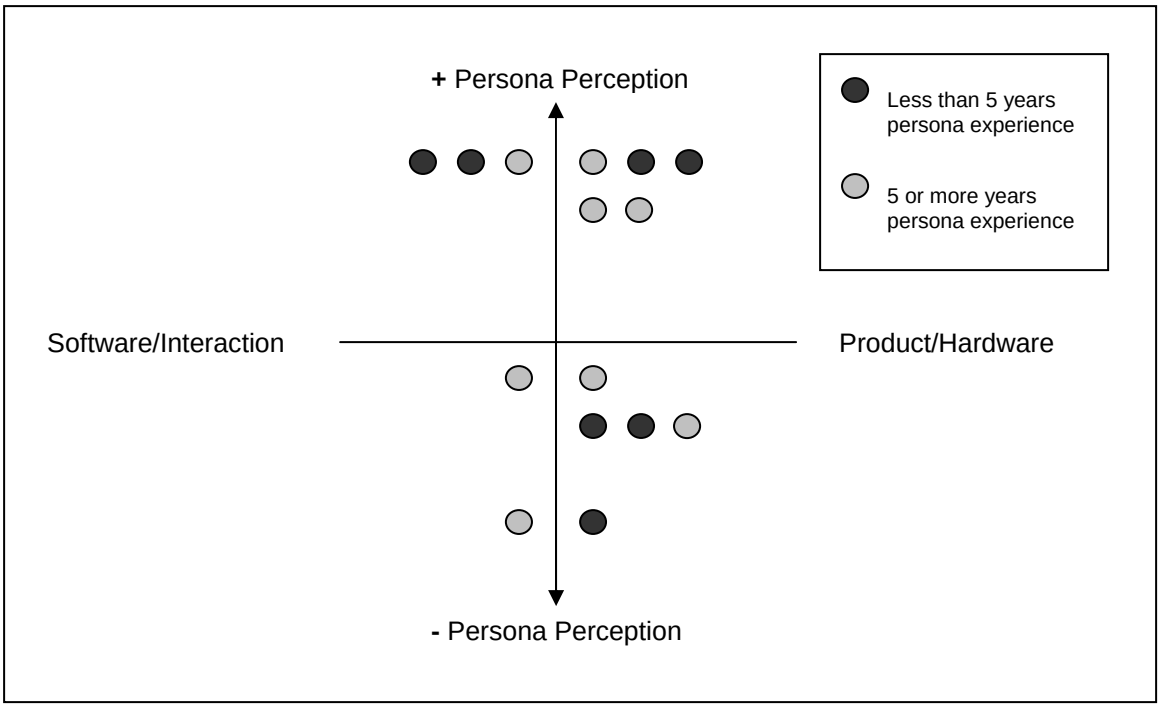


Figure 2: Interview participant perception based on design field.

4.3.1 Enhancing Focus and Understanding

During the interviews, most of the individuals (n=12) felt that personas provide increased focus and understanding of the user during the design process. Many commented that personas were a good way to humanize user research data.

Interview Subject #6 has used personas informally over many years to summarize data and keep the design team focused. Subject #4 aims to take traditional cognitive science or research documents and make them more visual through personas. This, he says, makes it easier to react to and empathize with the user. Subject #3 initially used personas instead of other methods to take the abstract representation of the user to the furthest degree possible in an effort to make them feel real. In comparison to other

methods like scenarios, segment analysis, and user profiles, he felt that personas were the most appropriate.

By having the research data become more than a book of statistics, many participants felt that designers are more likely to focus their design on the target end user. For example, Subject #9 sees personas as a good way to get people to be user centered rather than product centered. Interview Subject #2 believes that personas provide a consistent user view across a product team, helping them to see the differences between them and the user. However, Subject #12 believes that personas only work well in the stereotypical situation where team member design for themselves and need to be shown end users. But, he added, this is not a typical situation.

Most people interviewed remembered details about at least some of the personas that they had worked with in the past. Defining characteristics and catchy slogan titles were in many cases more memorable than the actual name of the persona. For example, while Subject #6 remembers personas that she has worked with and developed, the actual people that were included in the research to form the foundation of the personas were remembered more vividly. Subject #4 has created hundreds of personas over the years, and finds that he remembers the personas that were more visual than those that were biographical. And Subject #2 said that she remembers previous personas because she wrote them. Subject #13 explained that if the persona is iconic enough, it will stay in a designer's head during the development process. She believes that regular 'people' names are not memorable, and instead uses 'snappy' names that are named after the central characteristic of the persona. She finds naming personas so that they are easy to understand and remember is one of the more difficult steps in the process. For example, instead of calling personas focusing electronic media Sue and Bob, they could

be called Sharers and Creators. This, she believes, helps designers remember the research behind the user they are designing for.

Interview participants were asked where or how personas augmented creativity or imposed limits on the design process. Most commented that while personas often add limitations to the design, this can be beneficial. Subject #4 explained that "Personas are absolutely limiting, and they should be." Most designers design what *they* want, if it is possible, she added. But, that solution is normally not the right one for the problem at hand. Personas and research help to narrow the focus and provide boundaries. Subject #12 believes that good work is a result of well defined user needs. Blue sky brainstorming is always possible, but user research can provide the answer of whether or not the blue sky idea is useful. Interview Subject #1 said that she expects there to be limitations associated with design, adding, there "isn't a problem unless there is a problem space." And Subject #3 explained that a well designed persona opens up opportunities and creativity. The underlying goals and essential qualities can be extended into new spaces and personas can act as a springboard for new ideas.

For some, this increase in focus and understanding facilitates feature trade-off decisions. Subject #3 explained that personas streamline the decision making process and provide a clear case for why decisions are made. Subject #9 added that if the product development or product planners decide to cut or add features, they can figure out 'who' it will affect. The process is then no longer dependent on intuition or best guesses. For example, when designing products, Subject #13 creates a matrix of personas vs. features and looks for overlaps to identify product characteristics that should be included.

The ability of personas to enhance focus and understanding has been shown by their capacity to summarize and visualize data while providing often welcomed design constraints. In the case of some participants, a long term connection with the persona was facilitated by iconic and visual details, descriptive and unique naming conventions, and the ability to think back to the real people that formed the foundation for the profile.

4.3.2 Bridging Gaps and Increasing Communication

A few people suggested during the interviews that personas can bring stakeholder groups together and promote communication by creating a common language. Subject #11 believes that personas are a good way to create a story for a client and support decisions. They are a great sales tool and more tangible than other methods such as participatory action research. Subject #6 used personas and scenarios to facilitate planning and programming in the design of a new hospital. Multiple stakeholder groups were involved in the design process and, while personas didn't capture everyone's way of thinking (some preferred statistics), all groups immediately understood the concepts being explained by the tool. The personas provided an easy way to tie stakeholder groups together and to communicate information obtained from other methods such as traditional market data, ethnography, and participatory design. They were also successful in providing a common language other than that traditionally used in architecture.

In some cases, the success of the persona efforts created momentum and were adopted by other groups. In Subject #6's hospital project, the personas that were created for planning and programming design were, with no persuasion, adopted and used by the marketing and communication groups associated with the development. In addition,

other consultants associated with the effort are now using the tool with other clients and often use personas to get others excited in their sales pitches.

Subject #3 has been working on a long term project with the same set of personas for approximately 5 years. Initially they were developed for the user experience team, but their use expanded to developers, testers, marketing, training, and product support teams. These groups have not altered the core personas that were developed but have added to them with additional research in order to provide more detail about behaviors that are specific to their team's goals.

Personas were able to bridge gaps and increase communication in these situations because they were considered more tangible than other data representation methods and due to their ability to create a common language between diverse groups of individuals.

4.3.3 Personas in Non-Design Applications

During the interviews, respondents (n=3) described situations where personas were used for applications other than design. Subject #9 has found that writers at the company like personas because it gives them an audience to target their help content, manuals, and other documents toward. He also mentioned that the software help content group liked the idea of users being able to find the assistance they needed based on their personal characteristics. It was necessary to find a way to organize all of the help content by personas and a database seemed like a good solution. However, the amount of work that would be required to re-tag all of the existing data exceeded the perceived benefit and the persona-help function relationship was never fully established.

Subject #8 uses personas frequently as filters for user research and usability studies. For example, a study might require data from 40 individuals that fit the profile of “Phil” and recruiting efforts would be guided by those characteristics. The results are then typically presented in the same format, “Forty Phils were surveyed and…” This method also promotes active discussion between team members, he observed. For instance, they might not think that one of the recruits was actually a Phil and notify the recruiters of the disparity.

Subject #3 recalled using personas to communicate the types of financial advice that customers might need from a bank’s website. In the design an online visitor was asked a series of questions to determine which persona they were most like and then were offered the services that were most likely to fit their needs. This solution was a result of several weeks of interviewing target customers about their financial needs and a realization that individuals generally fell into three distinct categories.

These examples show that there is potential for personas in contexts outside of the product design process including applications in writing for a known audience, filtering and recruiting research participants, and tailoring services to specific types of consumers.

4.3.4 Personas Application in Design for People with Disabilities

Subject #10 felt that design for people with disabilities is another frontier for personas and that there is great potential in this area. Subject #7 believes that personas can be a way to help demystify customers with disabilities for designers and managers. This initial epiphany facilitated by the persona can then be supported by harder business data such as census figures and economic indicators. In his experience, when the user

needs research is presented “the personas help people appreciate the people represented by the data and seem much more comfortable talking about the issues involved.”

There is some resistance to creating personas focusing on people with disabilities, however. Subject #2 said that she has not used personas with disabilities, primarily due to the fact that the population is not a marketing issue for their projects. The concern of generalization was also presented. Subject #13 feels that it would be difficult to generalize disability and ability into personas. A better approach, she explained, may be to show real people with a range of abilities and disabilities rather than trying to cluster them into one representative user.

All interview participants were asked whether or not they had experience using personas for designs targeting people with disabilities. Most had not. Some respondents (n=3) had, however, used personas for other populations with specialized needs. Interview Subject #4 worked on a project that examined elder care and the integration of low frequency radio transmissions. The resulting personas were over 65 years old and had different needs, visual cues, and aesthetics, than other personas he has created and proved to be successful for the project. While Subject #13 had not designed for people with disabilities, she did recall creating a product for police officers who experience situational disabilities such as limited visibility. Subject #6 recalled an experience where a potential user group included migrant workers with language barriers. As a result, it was necessary to deal with challenges such as the attitudes harbored within stakeholder groups about non-English speakers.

While most participants had little to no experience using personas with disabilities, many believe that the tool has large potential in the field of universal and accessible design. The concerns raised by interview subjects about the generalization of the characteristics of populations with significant variability, however, suggests a need to identify a best practice for creating personas for these types of user groups in order to accurately portray their needs.

4.3.5 Appropriateness of Persona Use

The frequency of persona use varied among respondents. Two individuals used personas on every project, while others felt that they were only appropriate in certain situations. Subject #11 felt that sometimes studying users isn't necessary for design. With a good understanding of the culture surrounding the product, a skilled designer can design the aesthetics without research. Subject #3 doesn't use personas on short projects, unless he is employing cheaper, assumption-based personas that are not based on real data. Subject #6, on the other hand, believes that personas are always relevant, no matter what the project its. Instead, the determination of how much the client really needs the tool is generally based on the time and money available for the project.

The audience for personas also appeared to have an impact on their success. Subject #3 explained that he doesn't always use personas. It depends on the team and the product being designed. Sometimes customer segmentation is more appropriate. Subject #13 found that marketing divisions in corporations are used to persona-like methods and expect them, where as when working as a consultant, clients tend to be more responsive to real-person evidence. Subject #5 found that personas have not worked with software development team members as well as other designers. But,

some do see the potential and conceptually test the design with the personas prior to actual usability testing.

Subject #5 believes that personas are less valuable for industrial design than interaction design because of the cognitive component inherent to interaction design. While we share a general understanding of the physical human body including human factors and size concerns, cognitive understanding is much more abstract. Personas can help to provide this valuable perspective when dealing with mental models of practice, pressures, and other abstract concepts. In addition, she explained that often interaction designers "know too much" and that they are generally outliers to target users. Therefore, it is difficult to project themselves in order to understand the user. Personas help to force them outside of themselves. Other interview subjects held similar beliefs.

Because of these situations, there is an appropriateness of persona use that should be considered. The length of the project timeline, available resources, and intended audience may all have an impact on their value in the design process.

4.3.6 Lack of Understanding in Persona Application

A lack of understanding regarding how to use personas in the design process was identified as a key problem area. Over a third (n=6) of individuals referenced this idea in the discussion. Subject #13 has seen personas confound designers, especially when they are full of irrelevant information including attitudes and purchasing habits. In one instance, designers were given a persona that, among other details, contained the information that the user liked his Cadillac. This confused designers who wondered whether that meant that the product should have styling cues from the car. In Subject #12's experience, designers didn't remember important details about the personas, but

instead remembered extraneous characteristics. For example, designers remembered that one of the personas was a ‘soccer mom’ and added to this single detail with their own assumptions. As a result, they were imagining someone that wasn’t anything like the target user.

Subject #5 recommended that personas be concise but still contain personality and attitude. Some personas that are more like biographies are so convoluted that they lose value as a communication tool, she explained. Ideally, a persona should contain a one page synopsis that includes at least one each of three types of goals: experience goals, end goals, and life goals. A separate page should contain information about the work context and use environment. This differentiation between the two documents can help provide focus.

In one persona creation effort, Subject #8 used comic book illustrations to present persona profiles and scenarios, rather than traditional photos and write ups. While they were a fun exercise, he felt that this approach was a mistake because the concept of personas was very new to team members. The comics made the personas less believable and were more caricatures than actual relatable individuals. If team members had a better understanding of the tool, this method may have been more successful.

Subject #15 finds that the biggest problem with personas is how they work in a team environment. Members are not in a vacuum when working with a persona, traditionally information comes from many sources including customer contacts, personal experiences, and family. By introducing personas, team members are forced to either believe the persona and exclude all of this extra information, or ignore the persona and

believe the other data that tends to be richer and more in line with their thinking. In essence, personas don't offer a way to for people to look at data holistically.

In these reported instances there is a lack of understanding in the persona's application by designers in situations where they are unfamiliar with the purpose of the tool, are confused or distracted by extraneous personal details of the user, or are forced to choose between persona information with other external data sources.

4.3.7 Lack of Single Persona Methodology and Definition

Almost half (n=7) of the respondents felt that a lack of clear definition and methodology associated with personas was a hindrance to its success. Subject #6 believes that there needs to be more rigor in the persona definition, adding that right now a 'persona' can range from sloppy work to something that is very substantial. The community needs to be clearer on how and why to use them. If personas are made up or fabricated as a brainstorming or inspirational tool, that is okay she explains. But, that persona should not be used later in the process as a valid representation of the user. Subject #2 noted that there are many different definitions for personas and that this creates an issue of reliability. Some people make up stories, calling them personas, while others use research findings and market information. In order to believe in a persona, she needs to know that it is founded in data. Subject #5 felt that personas are a powerful tool but are inadequately explained as a methodology and process. This tension needs to be resolved and might be done so by creating a persona 'best practice.' Then, if someone does not want to follow that methodology, they can call their method by another name.

Subject #15 criticizes personas because there is no established procedure for making them and no way to replicate the persona creation process. If the same data were

presented to different teams, drastically different personas would likely be created. Additionally, he notes, there is no true method to verify personas to see if they are correct representations. Because of this, it is easy for others to question the tool and expand the definition of the user. Subject #5 explained that if personas are made poorly, they can hinder the design process. If the needs and goals are not captured the effort can fail because the user may be constrained or miss marked. This ultimately depends on the quality of user research.

The variability in definition and creation methodology, along with the lack of ability to replicate and verify personas, has resulted in a concern of the tool's trustworthiness with many designers and researchers. These apprehensions illustrate the need for a clear definition of the tool and an identified best practice.

4.3.8 Assumption Based and Ad-Hoc Personas

Personas that are primarily based on assumptions rather than user research data were a controversial topic during the interview. Several (n=4) of the participants saw great value in assumption based personas because they are typically inexpensive to create and yield favorable results. Subject #4 uses personas as quick, cheap, and easy discount usability tools. Instead of using traditional ethnography, he will use knowledge within the industry to create the persona, often referring to trade magazines and products currently on the market. Often, he said, these personas will be 75-80% correct, which is accurate enough for clients without a lot of money. While traditional ethnographic research may cost $50-60,000, these discount techniques can be done for a tenth of the price.

Subject #10 believes that in the absence of data, assumption personas are better than nothing. And, if you are making a persona based on familiar user types, the persona will probably not be radically off in the absence of data because team members likely know their customers. Data is helpful, but making the persona precise and specific in order to provide focus to the design should be the most important goal. Subject #11 explained that if you are limited on time or resources, or have cost constraints, but still wish to have some research, creating personas based on accessible online marketing statistics and data is almost free to integrate.

Subject #6 explained that while some companies do an excellent job of basing personas on real people research in an effort to get a deep understanding of the user, this is an elaborate process that others don't follow. Made up personas may keep designers focused on someone other than themselves, but it is risky. Ultimately they may find that the persona is not relevant to the project after wasting precious time and money. Subject #12's first time using the tool was with an interface design firm that did not base the personas on real data. It took three months for team members to complete them and, while some of the numerous details were accurate representations, many were not. He found the process destructive and not worth the time invested.

Despite this, Subject #4 feels that discount techniques for persona creation have potential because no one has created the tools to do this yet. In the next 5-10 years he believes that people will be able to make products as easily as people currently are able to make their own web pages. The biggest bottleneck in the process, however, is at the research stage, primarily due to the absence of tools to generate this information.

These examples show that ad-hoc or assumption based personas, if done correctly, may provide great value to the design process by creating focus and understanding of the target user at the expense of minimal resources.

4.3.9 Data-Based Persona Creation Methods

Few interviewees strictly followed methodologies that are currently published for person creation. Subject #5 has changed the Cooper persona process in a couple of ways. Cooper's method is self encapsulated where user research is followed by analysis and then personas are created. After the personas have been validated by stakeholders, Cooper moves on to scenario based design. In her approach, the personas and scenarios are developed together and presented to stakeholders at the same time. This, she feels, articulates more insights to a large group and is able to more effectively show key usage patterns and how they relate to the personas. It isn't necessarily the best approach, she admits, because it can short change the process around scenario development and scenarios should be the forefront of design rather than the end of user research.

Subject #16 utilized the "Cophar Method" for a project focusing on patient-centered communication in hospitals. After recruiting seven individuals with similar medical conditions for in depth interviews, data was analyzed using Maslow's Hierarchy of Needs. By analyzing how the hospital experience related to the various levels of Maslow's Hierarchy, team members were able to identify design opportunities. Figure 3 shows the resulting Maslow-Persona matrix. This data was then incorporated into five personas and utilized throughout the process. Figure 4 is an example of a resulting persona for this project. For more detailed images see APPENDIX B. Because of

medical privacy concerns, he added, personas were a good way to use sensitive information without revealing identifying characteristics.

Maslow's Hierarchy of Needs	PERSONA'S EXPERIENCE					DESIGN IMPLICATIONS				
	 Bonnie	 Suzie	 Delia	 Dave	 Marian	 Bonnie	 Suzie	 Delia	 Dave	 Marian
Self-actualization Becoming what one is.	Wanted to stay at work to maintain self.	Her cat's needs forced her to participate in life.	English was not very strong, but did speak Portuguese. Was she going to die?	I only knew about older folks getting cancer, then there I am coming out of surgery... I wanted to stay a part of my family unit	Found through a friend a physiolo-gist to help her deal with her situation. And where she was in life.	Tele-commuting w/ office?	Healthcare Tomagachi? Stay connected to people who depend on her to tell them what to do.	Provide info in native tongue. Provide case studies from volunteer patients' diaries.	Case studies of patients who volunteer their personal diaries?	Have access to counseling resources. Independent recommendations available?
Esteem, competency, mastery of task.	No waiting - was able to move quickly to treatment after biopsy	Mother did many tasks for her. Boredom was high. Only could tolerate 20 mins @ a time w guests @ hospital.	Had friends visit and they told her how beautiful she was.	My dad's an engineer. He made a spreadsheet to keep all the insurance informa-tion organized and updated.	Was asked to leave hospital w/o her fulling understand-ing how to maintain her tracheotomy. She was not ready to leave.	Expedite gaps in treatment(s) if possible	More entertain-ment Send e-mails when she has the energy	Provide shopping access for supplies / clothing.	Provide data and information in a way so that patient can access and become the masters of their situation.	Access to "How To" information dealing with treatments or device mainte-nance.
Love, belongingness to group.	Stayed active socially, w/family, and professionally throughout experience	A young @ home care nurse Treated out and treated her like a 'pariah.' She did not engage Suzie as a human & instead ran away. It hurt her esteem.	Husband and friends helped and supported that she get a second opinion on radiation trtmt. Most of family in Portugal Her friends from the US were there for her throughout.	My mom would come with me to admissions and stay with me, then my dad would come by at dinner time. I'd perk up when visits would happen.	All of the friendships she had developed over the years really came to support her. Two friends traveled by plane to see her.	E-mail, IM'ing Develop teams of survivors for those w/o family support structure.	Video recorded to log service quality	Improve connec-tion from hospital bed to world.	Access to a broader network can help with the healing and over all well being of the patient. Hospital sponsored chat room?	Friends at distance can visit, see the patient, and that hey received the flowers sent by using basic teleconference or digital pictures.
Safety, constancy, stability in a chaotic world.	Knew her doctors were having team meetings	Did not know what happened after surgery & was surprised. Billing confusing. Needed an itemized list for insurance policy.	Poor insurance. Doubted doctor in small hospital where she had her surgery.	It got to the point where my parents printed out a packet with my info for residents I didn't know that certain things were going to happen until someone walked in	Kept white board list of names of nurses on duty. Kept copious notes books of what each Dr. said.	More hospitals should use "team"idea. Make meeting notes available. Reduce redundant info in report(s).	Info on what insurance will cover Billing is organized in diff ways. Improve response from doctor	Provide options that insurance will cover and show alternatives. Access to other treatments.	Pre programed form with basic answers that can be transferred when checking in. A daily planner for scheduled activities	Images, titles, and names of care givers available constantly & when they walk in room send cue to patient. Helps develop relationships.
Basic physiological needs, water, food, sleep, sex, health	Husband helped a lot. She was able to rest and recover on the weekends after her chemo on Fridays. He was her support.	Mother told her, "You're staying for more than one day." Not motivated to eat, but had cat to feed. Ran out of meds ad doctor did not return calls.	Dr. recommended both Chemo & radiation. She selected only Chemo based on other Dr. input.	My surgeon wanted to amputate with in the week. Were there other options? We ended up going with another surgeon.	Became unconscious due to breathing problems. Daughter did not know if a stage 4 cancer patient should be revived. Dr. told her that the patient said do every thing you can do	Email "to do lists" to friends or family.	Reminder of new schedule Warns of low meds.	Make treatment information more available to patients.	Access to informa-tion on alternative treatments.	Personal notes or other recordings of patient's wishes for primary family member's reference.

Figure 3: Persona matrix based on Maslow's Hierarchy of Needs

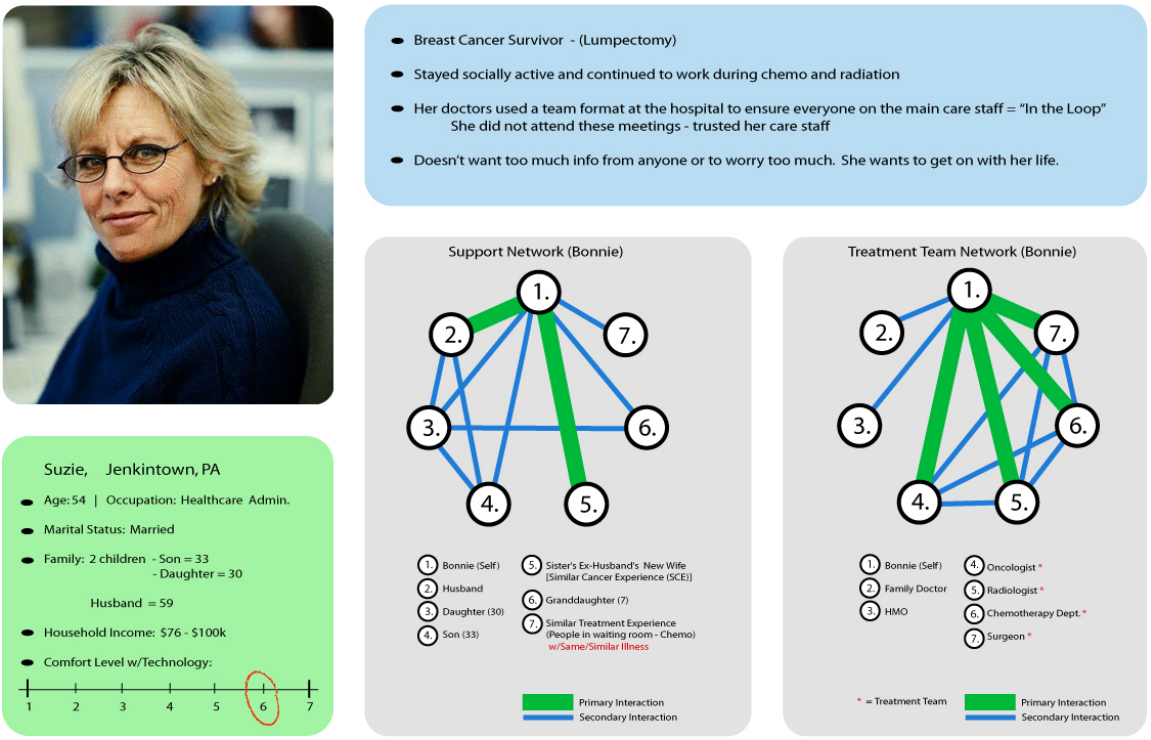


Figure 4: Persona resulting from the Cophar Methodology

For traditional ethnographic personas, Subject #4 will create a hypothetical persona that includes images, brands, etc. and then use this profile as a screening tool to recruit people for user research. The framework provided by the hypothetical persona can then be verified through more rigorous data collection. If it is a very specialized user, he explained, he may only need 1-2 people to base the persona on. If it is a broader problem, 5-7 individuals will be used. Subject #5 also uses a persona hypothesis to direct user research and to guide interview recruitment. If during the research they realized that the hypothesis is inadequate, they will adjust it as needed.

Interview Subject #4 tries to create three personas for a project – one that is moderate and two outliers. For example, when examining people that drive rugged SUVs, he

might create a persona that drives a Land Rover, one that uses a Jeep, and a third that owns a Hummer.

Some interviewees (n=3) said that they often reuse or repurpose personas for design projects. Subject #5 has a "stable" of personas at her company so that she doesn't always have to create a new one for each project. Subject #2 explained that she uses personas on every project and bases them off of the core personas of the company's software division. They are then augmented for certain projects in the hardware division based on usage information and demographics. She added that while the software personas are generally very broad, a single one can often lead to several hardware personas that generally require more specificity.

Some felt that verifying personas with additional user research after they have been created was a valuable addition to the process. Interview Subject #3 said that a year after personas were created for a large scale and long-term project, the group did a complete review of them. Based on their current understanding of the users from research, they revamped existing personas, killed off one, and added two more personas to the group.

These examples show that data-based persona creation methods rarely follow published and recommended techniques. Processes have been augmented through the inclusion of hypothetical personas that are later verified through research, simultaneous persona and scenario building, the creation of multiple personas to cover a spectrum of users, and the repurposing/reuse of these user representations for other projects.

4.3.10 Over-Simplification of Data

A major criticism of the persona method from interview participants (n=5) was that personas over-simplify user research data. Subject #12 believes that there is an assumption that developers can't deal with segmentation data and that it must be digested for them in the form of a persona. In his experience, designers, engineers, and developers want and do better with hard data including customer detail trends, rather than "pre-digested' personas. Subject #13 said that she would rather use evidence from real people instead of a composite of many data points.

In distilling findings from many users down into a single profile, some subjects worried that valuable information is lost. Subject #1 doesn't like personas because she feels that they create what she calls the "Dreyfuss Effect." This notion is based on the fact that the 50th percentile person isn't really an accurate picture of any individual, as some people have short arms and long legs, etc. In the same way, she feels that a persona doesn't actually exist because all of the qualities that a group is attempting to design for are combined into a couple of individuals. "It isn't a blind person, a deaf person, and a color-blind person," she adds, "it becomes a blind-deaf-color-blind person. You are designing for an impossible person." Subject #15 also felt that personas are overly-tailored. By representing an entire market segment in one person, the variance of the characteristics within that segment is hidden. As he explained, each attribute has a certain probability of occurring in the market segment. When personas have multiple attributes, the probabilities of each of these characteristics are multiplied, yielding a smaller slice of the market segment accurately being represented by the persona. Therefore, he feels that a highly specific persona represents no one.

In refining the details of a product, some felt that the generalizations associated with the persona method may cause problems. Subject #15 believes that there is an assumption with personas that if a design works at one point on a scale of abilities, the design will work for all people above that point. This isn't the case, however. For example, if something is designed for a novice, it is not likely to satisfy a technically savvy user.

Because of these situations there is a concern about the over-simplification of data when creating personas when multiple data points from real people is distilled down into one representative fictional user.

4.3.11 Increasing Validity of Data-Driven Personas

In order to increase the validity of personas as a medium for conveying user research, several strategies were employed by interview participants. Some subjects (n=2) said that it was important to involve designers and engineers in the data collection process. Subject #1 believes that it is difficult to convey all of the information that is gathered as a result of in-person contact to others. It is a different experience to see someone smile and be present than it is to look at 10 data points on a page, you "don't know a person until *you* have met them," she added. Subject #13 typically does the up-front research and passes it along to the design team. While designers aren't involved in the process as much as she would like them to be, they sometimes do review tapes from interviews and are debriefed about the research sessions.

While it is rarely possible to have all stakeholders involved in the data collection phase, many of the interviewees (n=6) talked about methods that they have used to show the correlation between user research data and the resulting personas. Subject #6 believes that it is important to show a client the real people behind the personas because, among

other things, it makes a bigger impact. At one company she worked for, an entire day was scheduled to immerse the team in the details of the personas. To supplement this, links to the raw data were included in the Power Point summary that was given to all team members so that they could revisit it at their leisure. She noted, however, that not all companies are interested in having access to the raw data. Subject #2 also presents personas via presentations containing links to supporting documents. In addition, all relevant information is kept in a shared drive so that anyone on the project can access it.

Many interview subjects felt that this relationship between raw data and personas can be enhanced through technology. Subject #8 would like to see data more interactively linked to persona documents. For instance, rather than providing a link to a spreadsheet containing market data, a designer could see a pop-up window with supporting statistics by simply moving his curser over relevant persona characteristics. Subject #9 sees potential in the idea of having people chat or interact with personas on a more dynamic level, allowing the personas to offer assistance and participate in the process. This could be amplified by the ability of personas to anticipate people's needs.

Databases many provide some solutions for these goals. Subject #9 believes that there is ample opportunity to share user research and persona efforts within his company's divisions through a searchable database. The sharing of information makes the process more efficient and provides a more consistent user experience across products. A database also provides the opportunity for more rigorous data analysis and the ability to generate unexpected results and correlations. Data input methods, he noted, must be flexible enough to accommodate everyone's information and methodologies, but still have insights recorded in a standard format in order to facilitate comparisons and analysis between subjects or personas. Subject #3 added that with the right technology

behind the persona, a database about users could be created that included qualitative, quantitative, and marketing information. If tagged correctly, the database could put a face to the data query.

Subject #8 developed a webpage where anyone can publish personas to the site and/or make adjustments to existing profiles. By allowing public access to this database, anyone can add their knowledge or understanding in order to make the personas more accurate. For example, someone might read a profile and feel that the persona isn't quite a Thelma, but more of a Susan. With this tool, they could suggest that change.

The described methods aim to increase the validity of data-driven user representations by providing a clear connection from the raw data obtained through user research to the resulting personas via the incorporation of webpages, databases, and other emerging technologies.

4.3.12 Preferred Methods

Interview participants also described methods that they used in conjunction with or instead of personas as a means of user research. Subject #10 often includes personas with process mapping to identify current and potential experiences. The maps, she explains, tell the stories while personas are the characters.

Subject #11 favors participatory design methods for user research. He will typically work with approximately 50 individuals, spending the day with them, breaking their schedule down, and asking questions. This is supplemented with action research methods such as Velcro modeling and feature prioritization. This, he feels, generates new ideas. At a later time new concepts can then be evaluated by those same participants.

Subject #15 prefers to get an understanding of the entire market segment in order to identify the factors that apply to all potential groups. He conducts traditional behavioral research on a random sample of people in order to identify trends and relationships between behavioral characteristics. Subject #12 prefers to use market segmentation profiles that are based on key market segment characteristics, such as aesthetics or comfort with technology, because these qualities are actionable and can be designed around. For example, one of the groups within the aesthetic profile may be "sophisticated." Characterizations of the sophisticated consumer include lack of price sensitivity and a desire for high quality and performance. From this knowledge, designers and engineers can base decisions.

Rather than creating personas based on a composite of people examined through research, Subject #1 prefers to conduct initial research that includes meeting real individuals and then using the information to create imaginary people around them. This is a one-to-one correlation that often just strips away identifying information from the original research subject. Out of 50 people that are interviewed, 10 might be chosen, based on the importance of their needs, to serve as the foundation for 10 imaginary individuals. Subject #1 has also used character cards at her current company to communicate research findings to team members, especially to those who didn't have the opportunity to take part in the data collection. The cards contain approximately ten data points for an individual who was interviewed including their age, work history, and health issues. But while she tends to refer to them often, she has found that the engineers in the group rarely do. Instead, they come to her with questions because she is expected to have an understanding of the user.

4.4 Discussion

While participants were from many companies and disciplines, there appeared to be no direct correlation between the design field (product/hardware vs. software/interaction) and their impression of personas. Additionally, the perception of personas (either positive or negative) did not to correlate with the amount of time that they had been familiar with the tool. Other factors such as educational background or amount of training on the use of personas may have had an impact on these perceptions and could be an opportunity for further research.

Interviews did validate claims regarding persona benefits that were published in literature. An overwhelming majority of participants felt that personas provided some element of increased focus and understanding to the design process by collecting and humanizing data obtained from user research. An increase in understanding promoted idea generation by providing limitations and facilitated feature trade-off decisions. Additionally, increased communication between team members was reported by some participants. Most notably, in several instances personas bridged the gap between very different groups (e.g. developers, designers, user researchers) by creating a common language and knowledge base. This characteristic may have potential outside of the design field, including areas such as education, policy, and business applications.

The method in which data was conveyed did appear to have an impact on its ability to be remembered. Most people interviewed recalled details about personas or other user research efforts that they had worked with. Often, however, the details associated with these users were more vivid than the actual names of the persona. In some cases, the details of the people that were interviewed during the data collection phase proved to be more memorable than the representative profile of the group. This may implicate that

any method that conveys user research data in a meaningful and cohesive way could create the same empathy and lasting impression that personas are expected to provide. Those participants who easily recall the names of persona characters, often had catchy titles or phrases associated with them. For example, one participant quickly named off “Sherlock Holmes”, “Home Depot”, and “Dear Abbey” as the three profiles created for a project some time ago. Other interviewees exhibited this same pattern. So, while Olsen and Cooper recommend using ‘people’ names to identify personas as a way to make them seem more real, this may not be a best practice when creating personas for long term impact.

The degree to which respondents felt personas were beneficial varied, however. The issues of definition, methodology and over-simplification were the primary concerns voiced by professionals. Several persona-like efforts were described by respondents and there was no single method individuals followed in the creation of personas. Some used rigorous data-driven approaches for their user research and persona formulation, while others conducted web searches or based characteristics off of assumptions within the team. While both approaches yielded successful results for respondents, there were clear differences between their methodologies. This lack of single, clear definition of personas caused those respondents that preferred data-driven design tools to question the trustworthiness of the persona method. There appears to be a need for a best-practice in the field.

Additionally, over a third of respondents felt that there was a lack of understanding about how to use personas. With a tool that aims to appeal to the needs of a broad audience and a number of disciplines, it is difficult to define how personas should be applied in all cases. Involving team members in the entire persona creation process, or at the very

least providing an introduction to the tool may prevent its misuse. Ultimately, more research and publication focusing on the ways that personas should be used, may help this problem. In addition, respondents had different opinions about when personas are most effective in the design process. While many subjects advocated their use for the duration of the product development cycle, others felt that they were only necessary in the initial design stages and engineers or other people involved down the line would not benefit from the tool.

A major criticism of the persona method by interview participants was the fact that the tool requires data to be distilled down from individual results to a composite, fictional user. In creating a persona, the variability of the user population is, to some extent, gone. When dealing with specialized products or populations, this may prove to be a critical loss. There may be opportunity in creating multiple personas across a range of abilities in a specific area. For example, when concerning hearing loss, personas with 0% loss, 50% loss and 100% loss might be created to illustrate the variability among users.

The need to address concerns about the validity of personas as a means of communicating user research data, has produced some valuable solutions. Several respondents indicated that they link user research data to their personas so that those designers who prefer statistical data and stories from individuals, rather than representative users, can easily access that information. There appears to be potential in qualitative research databases as well. In addition to providing a searchable storehouse of information, there may also be opportunity for statistical comparisons between users. As a database grows, characteristics obtained from users during multiple research efforts could possibly be combined to anticipate future research

findings. By allowing the public to enter and augment personas in a database, combining the behaviors and assumptions of many people could create an extremely large body of personas that could then be used with little additional research. And, with advanced technologies, designers might be able to more actively engage with this data through situations such as asking questions and receiving answers from a persona that is linked to the information.

4.5 Conclusions

This investigation of current design practices revealed many interesting findings that compliment, and in some cases refute, published literature. The design field (e.g. interaction design vs. product design) and length of time using personas did not appear to have an impact on the overall perceptions of the tool.

Participants overwhelmingly agreed personas provide enhanced focus and understanding in the design process through their ability to quickly and easily convey information in a visual way while providing boundaries for design decisions. These interviews also showed that personas can enhance communication within teams and with diverse groups by creating a common language when talking about the user.

These interviews also exposed practice based frustrations with personas and underlying problems with their acceptance. Many respondents felt that there was a lack of understanding of how to apply personas to the design process. In many instances designers were confused about how to integrate a persona into their existing methods and knowledge, or were led astray by extraneous details of the profile. In addition, the lack of a clear definition and methodology of personas was a significant source of dissatisfaction for interview participants. Because the term “persona” has been used to

describe creations ranging from assumption-based character profiles to rigorously investigated user representations based on multiple real individuals, many are concerned about the reliability of the tool. And, because methodologies are rarely published for proprietary reasons, it is difficult for people to identify a much needed best practice for personas.

Other reservations about the persona tool focused on the generalization of unique data points obtained from multiple individuals. This was especially true when examining the potential for personas in universal design applications and in representing people with disabilities. While many felt that there was great potential in this application, the idea of generalizing the variability within these populations was questioned. In order to compensate for the broad concern of the oversimplification of data, many participants employed techniques that aimed to produce a clear and accessible connection between the original research data and the resulting personas. This component of persona use has been enhanced through the inclusion of database technology and many subjects felt that there was significant potential in this area.

Most participants who used personas had adapted published methods and in some cases went against advised techniques with resulting success. For example, including descriptive and unique names or slogan titles in personas, rather than the recommended 'people' names, appeared to enhance the ability to remember a persona over time. Therefore, in future persona efforts and tool refinement, it is important to consider these modifications.

Persona use apart from traditional data-driven methods was reported with success by several participants who found value in the rapid and inexpensive results provided by

ad-hoc and assumption based personas. The appropriateness and effectiveness of the use of personas was also examined during these interviews and while there were no clear patterns of acceptance in terms of design concentration, timeline, or audience, more research in this area should be conducted.

CHAPTER 5: PERSONA CREATION

5.1 Purpose

The goal of this exercise was to gain an understanding of how individuals familiar with the concept of personas, but not necessarily experienced with the implementation of the tool, go about creating these artifacts. Additionally, this section sought to study what information participants chose to include in their user descriptions, and how well the information was communicated between collector and provider.

In order to accomplish this, participants were given limited guidance during the research study. Self guided data collection sessions were arranged for participants in order to provide a basis for the personas that each subject was then instructed to create on their own. Sessions were tape recorded and, along with the submitted personas, the researcher was able to analyze the participant's methods for obtaining data and creating the persona.

This participatory approach provided the tools that are helpful for the persona development process, but encouraged subjects to create and/or express themselves in their own unique way. The resulting artifacts provided information that would have been otherwise difficult to obtain during an interview with subjects asking "How would you create a persona?" or "What details do you think are important to include?" Participants may have given answers that they thought were socially acceptable to the interviewer or provided surface-level responses that lacked the richness and detail that was a result of the following exercise.

5.2 Methodology

Participants were recruited from within the Industrial Design program and included faculty members and students with known design research interests. Each student was paired up with a faculty member for the exercise. By making these pairings, which highlighted differences in age, gender, and living situation, individuals were inhibited from creating a persona based on their own personal experiences.

Because one of the goals of the exercise was to understand how individuals approach the challenge of creating a persona, little instruction or detail regarding persona creation or research methods was provided prior to the exercise. Teams were asked to meet at their convenience for a one hour interview session. These conversations were tape recorded for later analysis, but no researcher was present during the meeting. This was done in order to promote a candid exchange of ideas without the "Did I ask the right questions or do the right thing?" mentality from participants. During the interview hour, participants were asked to get to know one another and explore the topic of "Living Environments," with the goal of gaining an understanding of their partner's "current situation, needs, desires, and goals." This broad topic was chosen because it was familiar to everyone involved, but due to age and occupational differences, participants were likely to have very different experiences with the topic. After completing the meeting, participants were asked to develop a one page persona based on the information obtained from their partner. Once both team members' personas were submitted, they were sent to their partner for verification and commenting. This was done so that participants could report on the accuracy of the information contained within the persona based on their information.

The tape recordings of the conversations, persona submissions, and verification feedback were then reviewed and analyzed for similarities and differences between teams and partners.

5.3 Results

Four individuals participated in the exercise. Two male professors of similar age and family status and two female students of similar backgrounds were recruited. Students were not paired with professors that they knew well or had taken as an instructor. The entire project was completed over the course of two weeks.

5.3.1 Team A

Both participants were familiar with personas but neither had created them before. During their meeting they discussed how to proceed with the session and adopted a narrative format, with each describing their own living situation with some prompting for details and expansion on topics from the other team member. At one point, Student A drew a diagram to illustrate her current living arrangement. The following details the personas created by this team:

5.3.1.1 Persona 1: "Laura"

This persona was created by Professor A based on Student A's details. The one and a half page description included a short opening paragraph, description of the persona's current living situation, personality traits including activities are relationships with family, buying habits, musical preferences, and a description of her ideal living environment.

Key details of the persona "Laura":

- GA Tech junior that enjoys living in on-campus sorority house.

- Shares large room with private bath with 3 sorority sisters.
- Personalizes space with pictures, posters, and a teddy bear.
- Involved in Greek-life and sports activities.
- Visits frequently with parents that live in the area, often meeting for shopping or dinner.
- Wears JCrew, Gap, Express and listens to country and rock music.

The persona was representative of the information revealed during the interview. The professor chose not the change the name of the student when naming the persona. No picture was included in the submission and he did not include any physical details, with the exception of descriptions of clothing style.

5.3.1.2 Persona 2: "Wayne"

This persona was created by Student A based on the information provided by Professor A. The one page persona included a brief introductory paragraph, a description of his current living situation, family dynamics, use and functionality of space, work requirements and commute concerns, and an overview of the surrounding area.

Key details of the persona "Wayne":

- Moved to Atlanta suburb 2.5 years ago, into a 2 story home in a hilly, unplanned community
- Married father of Julia 19 mo. & Weston 2 mo. and is very involved in his children's lives.
- Before kids, many activities included home improvement, but now there just isn't time.

- Living space is comfortable for current family size, but would enjoy increased natural light and more functional 1 story plan.
- Tries to avoid rush hour commute by taking advantage of flexible work schedule.

This persona included many of the details discussed in the interview and the student gave the persona the same name as the professor. No photograph was supplied with the persona and no physical description of the persona was included.

Both participants reviewed their respective personas and felt that they were representative, adding no changes to the descriptions.

5.3.2 Team B

The nature of this interview was very different from Team A's session. Professor B presented Student B with a list of detailed questions, including class and work schedules, housing situation and payment arrangements, and feature trade offs. Student B's interview technique was less stringent, and the professor offered information in a more narrative (vs. question and answer) format. Unlike Team A, there was no causal conversation or "get to know you time." Both participants were familiar with the concept of personas, but neither had formally created them. The professor had used them in his classroom instruction, however. The following details the personas created by this team:

5.3.2.1 Persona 3: "Emily"

"Emily" was created by Professor B based on the information obtained from Student B. This half page description included three paragraphs that consisted of an introductory

paragraph that explains her current living situation and lifestyle, followed by a description of her customization of her space and future plans.

Key details of the persona “Emily”:

- Working student in early 20s.
- Lives in on-campus apartment with 3 others. Location, cost, and safety were important factors in choosing location.
- Feels cramped in her current space so she tends to spend most of her time out of the apartment.
- Personalization opportunities are limited because of on-campus restrictions, but decorates space with posters and artwork.
- Plans to rent space in future because of limited responsibility associated with it.

This persona followed the information provided in the interview and touched on generalized themes, but did not include most of the details reported by the student. Again, no photograph was included and relatively no information was provided with regard to a description of the individual or topics outside of the realm of living environment.

5.3.2.2 Persona 4: “John”

Persona 4 was written by Student B based on Professor B. The format was different than the others in that it was presented in a story format with an introduction to the family members, discussion of their housing history, goals, space and style, commuting concerns, and a summary paragraph at the end of the two page document.

Key details of the persona “John”:

- 33 year old married father of 2 year old girl.
- Moved to Atlanta 5 years ago. Purchased new, larger home after daughter was born.
- Currently lives in an open-plan home with contemporary interior about 5 miles from the heart of the city.
- Location priorities included school system quality, safety, house value appreciation, proximity, and culture.
- Renovated home previously but would now consider purchasing home that did not require this effort.

Like the other personas submitted through this project, this student did not include a picture and included no physical description. The persona did follow the information provided in the interview closely and very few details were altered from the interview to final persona write-up.

5.4 Discussion

While the interview and meeting styles were very different from Team A to Team B (informal conversation vs. a structured interview with clear interviewer and interviewee roles), the same themes and similar details were included in the personas. Both professors had experience with user research and data collection, and their interview styles reflected this. The personas that they created, however, did not differ greatly from those of the students in terms of content, format, or scope.

All personas submitted by participants included an introductory paragraph, a description of the persona's current living situation (both inside the space and the external environment), and a description of personal habits and characteristics including friends and family. In terms of presentation, none of the personas included pictures and two of the four names of the individuals were changed from that of the person that was being interviewed. The length of the personas varied from three paragraphs to two pages, and the level of story-telling emphasis varied.

Although the people involved in this exercise had very different personalities and priorities, trends were evident within the personas. In terms of themes touched on in the persona write-ups, all included details about living environment, location priorities, personalization, and family. The details within these categories, however, were very different for the female students and male professors. Table 1 describes these findings:

Table 1: Persona characteristics as related to demographics

	Living Environment	Location Priorities	Customization	Family
Female Student Persona	On-campus rented space Shared with other students Limited room	Proximity to campus Cost Safety	Limited by campus restrictions Posters Pictures	Influence location (current and future) Visits important
Male Professor Persona	Owns house outside of city Shared with wife and child(ren) Comfortable space but limited room for expansion	Proximity to city center Proximity to campus School system quality Community quality	Home improvement and renovations	Top priority Married with small child(ren) Child needs influence space sue

While it is often recommended for multiple individuals to be observed or interviewed as the foundation for a single persona, generalized user profiles and personas are sometimes based on the data collected from a single interview and combined with assumptions and other secondary data available to the creator. Participants were allowed to use any information that they had available to them, including other interviews or general knowledge if they chose to do so. This, however, was not emphasized in the instruction and no one reported doing so. It may have been beneficial to discuss the persona making process in more detail with participants after the exercise was completed in order to get feedback and information about their methodologies.

This format for research might be appropriate when multiple interviews are difficult for more than one person to complete. While the results more resembled user profiles than personas, there were commonalities between the professor descriptions and student descriptions. The trends within these personas are easily mapped and may provide a solid foundation for a single student or professor/ young family man persona.

It is interesting to note that while the interview formats and data collection processes varied, the resulting personas and themes included in the write-ups were relatively similar. This finding may indicate that the individuals share a common understanding of character development and the level of detail necessary to convey the essence of a character or persona. These similar personas resulting from relatively inexperienced participants conducting the data collection may also signify that rigorous training in interviewing methods or persona writing may not be as necessary as some might assume.

5.5 Conclusions

This exercise aimed to examine the ways in which people choose to collect data from individuals for the basis of persona creation, as well as to investigate the content of these profiles. The participant-guided interview sessions provided the opportunity for individuals to determine their own information-collecting format and the ability to ask questions they felt were necessary in order to get the proper content for their personas. Two male professors of similar age and family status were paired with two female students that were also of comparable age and living situation for this study. While data collection methods varied, the format and themes included in all four resulting personas were similar. The details included within the student personas were closely related, as was true for the professor personas. Results from this exercise may indicate that there

is potential for multiple people to collect data from individuals with minimal training in order to create realistic and significant composite personas.

CHAPTER 6: PERSONA UTILIZATION

6.1 Purpose

Few studies have been reported on the effectiveness of personas in the design process. Most of those that are published present case studies of persona implementation as observed by project managers and user research specialists. The impact of the tool on an individual's design processes or understanding of the user has rarely been studied in a structured manner. This project aims to address some of these issues by studying student groups using personas over the course of a 12 week long industrial design studio project. More specifically, the following research questions were addressed:

- What impact do personas have on the design process?
    - What impressions do students have about the tool?
    - What information do students value for persona development?
    - What impressions do instructors have about the use of personas throughout the project?
- What impact does the persona tool have on communication?
    - When speaking to others outside the group about design decisions?
    - When communicating with group members? Does it provide a common language?
- How is the understanding of the target user impacted by the use of personas?
    - Does utilizing personas lead to a better understanding of the needs and desires of the user?
    - How does this specifically impact universal and/or accessible design?

These research questions were investigated through the review of project deliverables, observations of student presentations and communication, interviews with students and instructors, and a pre/post test. This population was selected as participants for several reasons. In addition to the ease of accessibility to this group, the educational environment presented a fairly controlled setting for the study. Also, it could be presumed that few students had experience with the nature of the project they were assigned. In other words, they were less likely to be able to draw on previous design experiences, as might be the case with design professionals, for solutions to design problems or for a deeper understanding of the target market. In some cases, this target market included people with functional limitations.

Rönkkö investigated the usefulness of personas by studying three student software development projects. He too believed that performing these studies in the simplified context of the educational setting would provide a more controlled study environment. Results of the study were obtained through continuous project involvement and discussions with students, along with follow-up reflection seminars. In addition, students were asked to write individual reflections on their project experiences at the project midpoint and completion. His investigation involved 17 students who were split into 3 project groups over the period of 20 weeks. Students were provided with reading references, lectures that presented the persona technique and regular reflection seminars during the first half of the project. Students came from relatively the same educational background and had the same overall organizational constraints including project timeline and support. The teams differed in terms of projects, application areas, target users, use context and access to end users. In one group, Rönkkö found that personas were used primarily to justify already taken usability decisions to other project members, rather than acting as a guide throughout the process. In another group,

students found personas useful as a starting point to think about end users in a structured way, but did not use personas to make design decisions. The final group did extensive ethnographic user research to create their persona, but did not use the character as much as anticipated because they were able to contact end users directly for feedback. Therefore, they were skeptical of the usefulness and efficiency of the tool. In all project cases, the primary benefit provided by the personas was as a communication tool to justify 'after the fact' constructions and rationalizations of already taken design decisions [24, 50].

6.2 Methodology

Two sections of the Industrial Design Intermediate Design II course were recruited for this study. Students enrolled in this course were in their third year of a four year Industrial Design curriculum. This course intends to provide an overview of the product development process with a focus on problem solving methods. The 12 week project that this study monitored was sponsored by a local high-end shower spa manufacturer. Students were asked to approach the design of a shower spa by either improving the current product through a refinement of assembly and installation, design a new product that incorporated new technology, or design for a new market or improved user experience. Students had the opportunity to visit the company's facilities and interact with representatives throughout the course of the project.

The project was divided into four, three-week phases that consisted of pre-design, design/concept generation, concept refinement, and finalization. In the first phase, all studio sections worked together to create a body of research knowledge that covered topics ranging from market trends to materials. After student groups consisting of 3-4

students presented the findings from their assigned research topics, all information was combined into one document and redistributed to everyone involved in the project.

The study began at the second phase of the project timeline. While Phase 1 consisted of general research, Phase 2 marked the start of the concept generation. Implementing personas after this milestone had several advantages:

- All groups had the same data from which they would base design decisions. This provided an element of control in the study. How they focused on and interpreted this data resulted in design differentiation.
- The initial research topic assignments in Phase 1 varied widely. Some were better suited for persona use than others. For example, market segmentation would interface well with personas while materials research would not.

All students in participating studio sections were given a 60 minute presentation by the researcher that covered the basic concept of personas and the recommended methods for creating them as found in published literature (see APPENDIX D). They were then asked to develop personas based on their chosen design approaches and the body of research previously collected. Initially it was discussed that some groups should be asked to use personas during their design process, while others would be asked to refrain from their use. While this would have provided a control group, it seemed likely that it would be difficult to implement and monitor. Therefore, all participating students were asked to create personas by their instructors.

Due to the differences in teaching styles and interests between sections, students were likely to produce different designs targeted toward different user groups. In order to

accommodate this and to focus on the identified research questions, student projects were not compared for design quality and study results were not based on student grades on the project. Rather, data was collected regarding the use of personas and their impact on the design process through informal observations of presentations, interviews with participating students, interviews with instructors, a review of submitted materials, and a pre/post test.

Informal observations of presentations and classes were conducted at several points throughout the semester. Ideally a researcher would be present at all milestone presentations and pin-ups to observe student progress on the project. This was not possible for this study, however. In addition to informal observations, multiple groups were approached a week after the presentation on personas was given for question and answer opportunities.

Semi-structured group interviews were conducted with all participating students at the end of the project (See APPENDIX D for the interview guide). Interviews were conducted apart from other classmates and without the presence of the instructor. Participants were instructed that their answers would have no impact on their grade in the class. An audio tape was used to record responses for later transcription (see APPENDIX E for session notes). Interviews lasted between 15 and 25 minutes for each group.

Semi-structured one-on-one interviews were conducted with participating instructors after the semester's completion. An audio tape was used for recording responses and subsequent transcription (see APPENDIX E for session notes) and sessions ranged

from 15 to 30 minutes in length. Instructors were asked about their overall impressions of student projects and the impact of personas on the design process.

Student work was reviewed for persona content and references after the completion of the project. Documents available for review consisted of final presentations and al process book for each group created after the design was finalized.

A pre/post test focusing on accessibility concerns for users with functional limitations was administered. In addition to the personas presentation given to students, all course members attended a lecture by another faculty member on the aging population in American and common physical and cognitive limitations within that group prior to the pre-test administration. The pre-test was given to all students where they were asked to *"Please list the issues that a person with a disability might experience when using the Shower Spa"* prior to the creation of personas for the project A post-test consisting of the same question was administered at the time of the group interviews after the completion of the project. Students were given 10 minutes to complete the test and were asked to do the work independently. Answers were analyzed for differences in the number of responses or items given and the types of issues listed. Comparisons were made on an individual student level, between groups, and between classes to measure the impact of using persons with disabilities on the understanding of that population.

These five approaches sought to answer the research questions in the following ways:

- *What impact do personas have on the design process?*
    - *What impressions do students have about the tool?* - Students were asked to explain their experiences through interviews at the end of the project and were also asked how extensively they used their personas

(i.e. did they create them and set them aside or instead refer to them consistently throughout the project?).

- *What information do students value for persona development?* – The personas that were developed by the project groups were analyzed for content (e.g. incorporated research findings, additional information) and ongoing use (e.g. were some persona attributes ignored as the project progressed, did the personas evolve).
- *What impressions do instructors have about the use of personas throughout the project?* - Participating instructors were interviewed and asked for feedback about the overall experience. In addition, they were asked to share observations about their student groups with regard to persona use and design decisions.

- *What impact does the persona tool have on communication?*
  - *When speaking to others outside the group about design decisions?* This information was gathered through observations during project presentations, student interviews, and instructor interview sessions. Additionally, submitted project materials were reviewed for persona references.
  - *When communicating with group members? Does it provide a common language?* Information was provided through post-project interviews with students.
- *How is the understanding of the target user impacted by the use of personas?*
  - *Does utilizing personas lead to a better understanding of the needs and desires of the user?* Information was provided through interviews with students and instructors. The question of a "better" understanding was difficult to quantify. But, through observations, interviews, and materials,

an attempt was made to correlate the depth or frequency of persona use with depth of user needs consideration.

- *How does this specifically impact universal and/or accessible design?* The goal of the pre/post test was to identify the student's understanding of accessibility and limitations that a person might experience when using the shower spa and to measure an increase in knowledge or understanding, if any, over the course of the project. Results were compared to other variables including communication and frequency of persona use.

6.3 Results

Participating students in both industrial design studio sections were assigned similar deliverables, given the same project timeline and the same number of hours of course instruction. The instructors for these sections were different, however, and although they worked together in planning the assignments, they had different teaching styles and specialties. Instructor C's section included 12 students and 11 participated in the research study. Instructor D's section consisted of 14 students and 12 participated in the research exercise. Instructor D's research interests were in the disabled and elderly populations. Therefore students in his section received more instruction on those topics and were asked to consider accessibility and other assistive devices in their designs. See Table 2 for the student group designations with respect to instructor section.

After the initial research study proposal and presentation on personas to students, the researcher did not have direct impact on the course direction. Instructors independently decided on project guidelines and deliverables for personas and other assignments. Instructor C required his student groups to create three personas for their target market

and asked them to be presented, along with other deliverables including image boards, in the following class period - two days after the initial personas presentation. Instructor D required his student groups to create two personas that were due one week after the personas presentation. Of the two personas, one was to be under the age of 35 and the other over the age of 65. One of these personas also was required to have some type of physical disability. Students produced one document for each persona.

Table 2: Participating students, their respective groups, and instructors.

Instructor C Student Groups				
	Group 1	Group 2	Group 2	Group 4
Student Group Members	Student # 2 Student #11	Student #5 Student #7 Student #9	Student #3 Student #4 Student #8	Student #10 Student #6 Student #1
Instructor D Student Groups				
	Group 5	Group 6	Group 7	Group 8
Student Group Members	Student #23 Student #22 Student #19	Student #20 Student #21 Student #24	Student #13 Student #14 Student #15	Student #16 Student #17 Student #18

6.3.1 Informal Observations

One week after a presentation was given on the background and methods for persona creation, classes were visited by the researcher for informal observations and conversation.

The following information was obtained from Instructor C's section:

Student–created mind maps were posted on studio walls in addition to related personas. Most students in this class used the mind-mapping technique to brainstorm persona and target market characteristics. Examples of these maps are shown in Figures 5 and 6

Figure 5: Image of student creating a mind map for persona brainstorming.

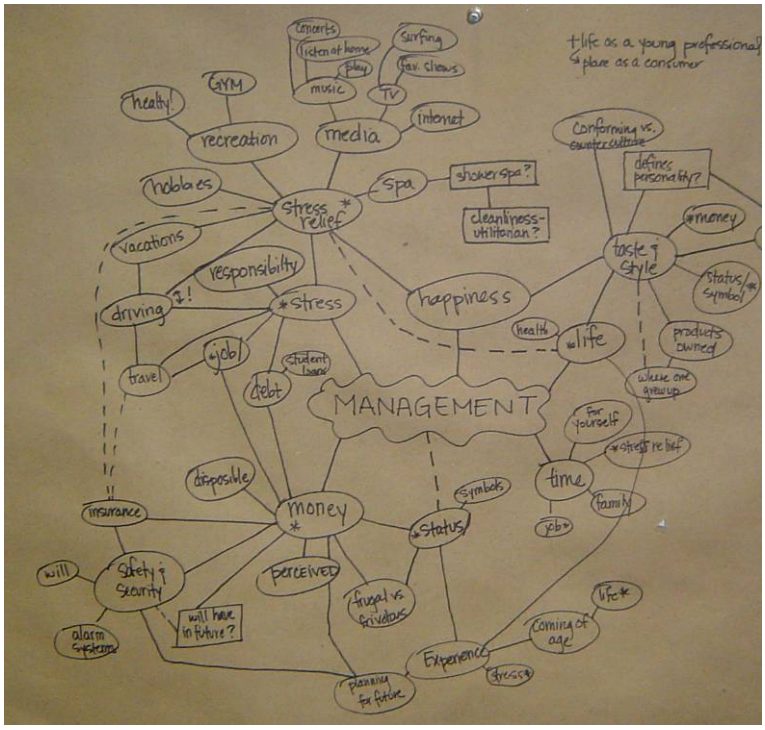


Figure 6: Example of mind map created for a young professional customer.

After the presentation, students in Group 1 independently created 3 personas independently. These were then compared with other team member's personas, and after identifying duplicate characteristics, they narrowed the collection down to 3 personas. Members of the group said that they were interested in the boundaries of style and sterility and planned on focusing on middle class America as their new market. They sought to improve the existing product by creating a shower spa that was more aesthetically pleasing, lower cost, and modular. They also explained that they were having difficulty meeting outside of class to work together and were experiencing trouble with group dynamics.

Group 2 explained that they had created 3 personas, one made by each group member, which were represented with persona sheets and life-sized cut out image boards

including the one shown in Figure 7. Information was obtained through personal contacts, previous design research, and online data. One student relied on his personal experiences as his mother worked at a gym. He spoke with her about the business in order to create the persona of the gym manager. Another student looked at online biographies of fitness instructors to get salary and background information for her persona. The third student had previously researched pre and post menopausal women for another project and drew from those findings to create her gym member persona. All of the students appeared to have a good understanding of the personas that they created. One of their goals, they said, was to reconcile the stylistic preferences between personas in their design.

Figure 7: Group 2 Life size persona cut out and image board

Although members of Group 3 weren't available for conversation, their personas were posted in the classroom. They included "Trend Setter Stacey", "Mid-Life Crisis Braden", and "Lazy Plumber Mark". Rather than traditional stock photography, they appeared to use real photos for the persona pages. While being observed, students did not use the personas' names while discussing product feature placement. They did, however, go back to the image boards and personas that they had created to try to get an idea about

how to resolve problems. In addition to personas, the group had several style boards posted for inspiration including the one shown in Figure 8.

Figure 8: Asian inspired style board created by Group 3

Group 4 created a primary character named Marina and an anti-persona named Tracy whose taste didn't match their design goal.

Informal observations were also conducted in Instructor D's studio on the same day and the following information was documented:

Group 5 created their personas as a team and included “Old Man Eugene” who was a “sugar daddy” to his 32 year old stripper wife. Group members said that they had approached the personas as a fun and crazy story, and that the persona creation was the most fun they had experienced so far in the project.

Group 6 members were not available for conversation, but their personas were posted in the studio. They included the elderly “Anita Showerspa” and “Justin Case,” their younger market persona. Persona sheets included background, attributes, and user needs categories.

Group 7 said that during the research phase their group had been assigned the user needs and ergonomics topics for investigation. Their personas included “Herbert,” 85, who uses a walker and was inspired by a character from the TV show Family Guy, and “Roxanne,” 34, an ad executive with an active lifestyle. Students based her on a character in the TV show Sex in the City and popular culture. Their concepts included steps, seats, handles, and a foot rest for shaving. All group members included persona considerations into their concept drawings. At this point they had designed separately for each persona and planned to reconcile the designs later.

Group 8 was not available for observation or conversation during this visit.

In addition, student presentations were observed at several points during the project including concept design and final evaluation model presentations. During those times that a researcher was present, few groups mentioned personas in their explanation of features or design decisions. In the few instances that a group member referred to the user, names of personas were typically not used.

6.3.2 Project Deliverables

Upon completion of the final project, submitted process books and final presentation files were reviewed for persona references and user design considerations.

6.3.2.1 Group 1

This group did not include personas in their final design presentation. And while personas were included in the final process book for the project, there was no mention of the user or user needs in subsequent sections of the book. Figure 9 is an example of the personas that the students created for this project. Their profiles contained images, first names, occupational titles, backgrounds, incomes, and goals related to the use of the shower spa.

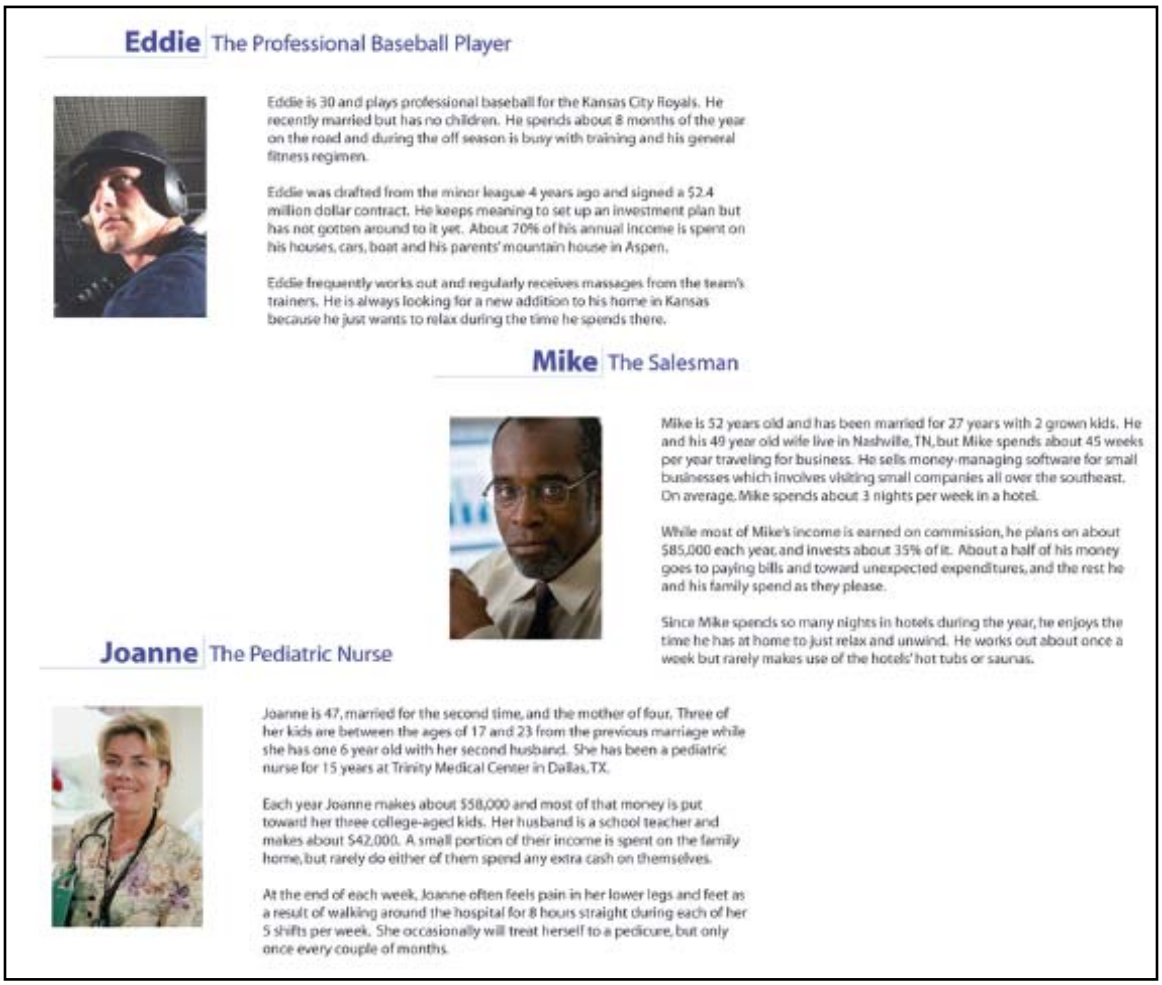


Figure 9: Group 1 personas included in process book

6.3.2.2 Group 2

Personas were mentioned in the group's process book and the final presentation. Group 2 explained in their book that in order to design for the broad spectrum of users and stakeholders involved in a gym shower spa setting, they developed three personas that included a gym patron, manager, and a fitness instructor. In addition to the biographical sheets created for each persona, life-size cut outs were also made, as shown in Figure 12. Biographical sheets, two of which are shown in Figure 10 and Figure 11, contained full names, photos, occupations, quotes, background information, the gym's role in their everyday life, and goals. These personas where then used, they added, throughout the

design process in addition to research and observations in the gym environment. Figure 13 shows a view of the final design for their gym spa.

The Gym Manager

ID3012 Spring 2006

"This gym is my life."

Rachel Andersen

Age: 33
Occupation: Gym Manager
Spouse: none
Children: none
Location: Dana Point, CA
Income: $54,000/year

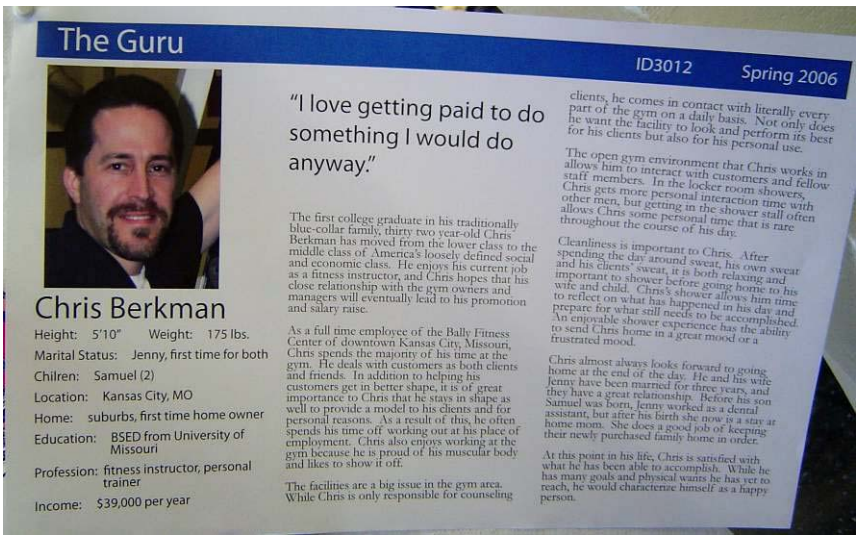
Rachel lives by herself in an apartment near Dana Point, California. She dedicates almost all of her time to her job as a gym manager at the local LA Fitness, opening the facility as early as 4:30 am and usually staying past closing hours to finish up the day's work or to get an occasional late workout in. By the time she gets home, it's often 11 pm, at which point she'll shower, crawl into bed, and turn the late night news on until she falls asleep. She doesn't have much time for personal leisure, so when she's free, Rachel loves to take her dog, Cassie, for a walk, bike to the nearby beach, or grab a cup of coffee with one of her girlfriends.

While the gym requires a lot of time and commitment, Rachel enjoys working with people and has become very close with many of the gym employees and members. She hopes to one day own and run her own gym and she places such a goal above all else. Rachel would love to be in a relationship but it's too difficult to maintain or develop one; "It's hard enough to meet someone I like," she divulges. Kid's are not a priority.

Rachel briefly attended a small community college in Alabama, but ended up dropping out when her part time job at another local gym started taking up too much of her time. She has always felt the need to work and remain employed, getting her first job at Subway when she was 14.

She moved out to California after a falling out with her ex-boyfriend, having realized Alabama simply wasn't the place for her. When she first arrived in California Rachel had only $200 to her name. She prides herself on being independent, responsible, and healthy. (She also LOVES Alanis Morisette...and smoothies.)

Figure 10: Group 2 Gym Manager persona



The Guru

ID3012 Spring 2006

"I love getting paid to do something I would do anyway."

Chris Berkman

Height: 5'10" Weight: 175 lbs.
Marital Status: Jenny, first time for both
Chilren: Samuel (2)
Location: Kansas City, MO
Home: suburbs, first time home owner
Education: BSED from University of Missouri
Profession: fitness instructor, personal trainer
Income: $39,000 per year

The first college graduate in his traditionally blue-collar family, thirty two year-old Chris Berkman has moved from the lower class to the middle class of America's loosely defined social and economic class. He enjoys his current job as a fitness instructor, and Chris hopes that his close relationship with the gym owners and managers will eventually lead to his promotion and salary raise.

As a full time employee of the Bally Fitness Center of downtown Kansas City, Missouri, Chris spends the majority of his time at the gym. He deals with customers as both clients and friends. In addition to helping his customers get in better shape, it is of great importance to Chris that he stays in shape as well to provide a model to his clients and for personal reasons. As a result of this, he often spends his time off working out at his place of employment. Chris also enjoys working at the gym because he is proud of his muscular body and likes to show it off.

The facilities are a big issue in the gym area. While Chris is only responsible for counseling clients, he comes in contact with literally every part of the gym on a daily basis. Not only does he want the facility to look and perform its best for his clients but also for his personal use.

The open gym environment that Chris works in allows him to interact with customers and fellow staff members. In the locker room showers, Chris gets more personal interaction time with other men, but getting in the shower stall often allows Chris some personal time that is rare throughout the course of his day.

Cleanliness is important to Chris. After spending the day around sweat, his own sweat and his clients' sweat, it is both relaxing and important to shower before going home to his wife and child. Chris's shower allows him time to reflect on what has happened in his day and prepare for what still needs to be accomplished. An enjoyable shower experience has the ability to send Chris home in a great mood or a frustrated mood.

Chris almost always looks forward to going home at the end of the day. He and his wife Jenny have been married for three years, and they have a great relationship. Before his son Samuel was born, Jenny worked as a dental assistant, but after his birth she now is a stay at home mom. She does a good job of keeping their newly purchased family home in order.

At this point in his life, Chris is satisfied with what he has been able to accomplish. While he has many goals and physical wants he has yet to reach, he would characterize himself as a happy person.

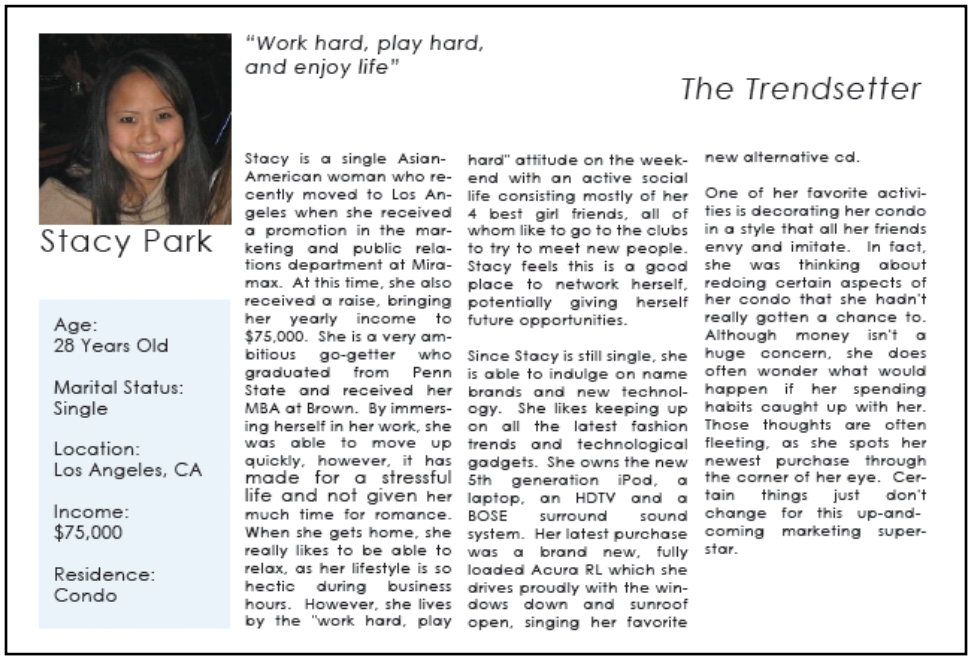
Figure 11: Group 2 Fitness Instructor persona

Figure 12: Group 2 life size persona cut-out image boards

Figure 13: Group 2 final gym spa design

6.3.2.3 Group 3

This group did not include personas in their final presentation or in the main content of their process book. They did, however, devote a section of their Appendix to the creation and use of the persons. In this section they stated that personas were an important evaluation tool throughout the project. They selected a primary user, secondary user, and an affected user for their personas. The primary and secondary users were used to help make design decisions and the affected user, a plumber, was considered for installation and repair issues. These personas are shown in Figure 14, Figure 15, and Figure 16 . Personas included names, backgrounds, photos, slogan titles such as “The Trendsetter,” quotes, activities, and goals.



"Work hard, play hard, and enjoy life"

The Trendsetter

Stacy Park

Age:
28 Years Old

Marital Status:
Single

Location:
Los Angeles, CA

Income:
$75,000

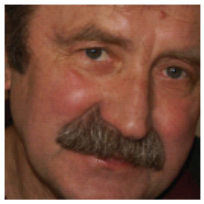
Residence:
Condo

Stacy is a single Asian-American woman who recently moved to Los Angeles when she received a promotion in the marketing and public relations department at Miramax. At this time, she also received a raise, bringing her yearly income to $75,000. She is a very ambitious go-getter who graduated from Penn State and received her MBA at Brown. By immersing herself in her work, she was able to move up quickly, however, it has made for a stressful life and not given her much time for romance. When she gets home, she really likes to be able to relax, as her lifestyle is so hectic during business hours. However, she lives by the "work hard, play hard" attitude on the weekend with an active social life consisting mostly of her 4 best girl friends, all of whom like to go to the clubs to try to meet new people. Stacy feels this is a good place to network herself, potentially giving herself future opportunities.

Since Stacy is still single, she is able to indulge on name brands and new technology. She likes keeping up on all the latest fashion trends and technological gadgets. She owns the new 5th generation iPod, a laptop, an HDTV and a BOSE surround sound system. Her latest purchase was a brand new, fully loaded Acura RL which she drives proudly with the windows down and sunroof open, singing her favorite new alternative cd.

One of her favorite activities is decorating her condo in a style that all her friends envy and imitate. In fact, she was thinking about redoing certain aspects of her condo that she hadn't really gotten a chance to. Although money isn't a huge concern, she does often wonder what would happen if her spending habits caught up with her. Those thoughts are often fleeting, as she spots her newest purchase through the corner of her eye. Certain things just don't change for this up-and-coming marketing superstar.

Figure 14: Group 3 primary persona



Braden Johnson

Age:
45 Years Old

Marital Status:
Married, 2 Kids

Location:
Charleston, SC

Income:
$86,500

Residence:
House

"These days, I just feel like trying different things"

The Mid-Life Crisis

Braden is a happily married man who has worked a steady job for the last 21 years of his life. Through this position, he has been able to move up within the company and finally has enough money to, not only provide his family with everything they need, but also finally provide his wife with the means to remodel the house like she has been hoping for for the past several years. Braden is a very family oriented man and would want nothing more than to make his family as happy as they can be, so he is delighted to finally be able to finance the home improvements for his wife.

Braden is also a very active member of the community that he lives in. Through his children's school organizations, the neighborhood tennis team, his local church group, and the nearest fitness center, he is always looking for more ways to stay active and be around the people he enjoys. As of recently, with the onset of his midlife crisis, he has become a regular attendant of his gym, Crunch Fitness, and is looking to stay in control of any aspect of his life that he can. Through this frequent activity, he has recently suffered a minor back injury that slows him down though only a little.

Braden has had thoughts of fighting the onset of age with various purchases, changes in appearance, or changes in habit. Through these variations, he feels that he will be able to retain the younger self that he is so reluctant to let go of. Although he has not yet made any irrational or extremely luxurious purchases, Braden personally knows that he is going to crack soon and will buy some top-of-the-line item that is not at all necessary for his lifestyle.

Figure 15: Group 3 secondary persona

Mark Brown

Age:
37 Years Old

Marital Status:
Single

Location:
Pittsburgh, PA

Income:
$50/hr - hrs vary

Residence:
Apartment

"Why read a manual when you already know what you're doing?"

The Lazy Plumber

Mark Brown is an average thirty-seven year old plumber. He is happy about his job and his house and is positive about life. He is not particularly proactive during the workday, but he faithfully completes all his jobs. His work is mediocre and he refuses to read any installation manuals. Mark charges $50 an hour for his work.

Driving a utility all over Pittsburgh everyday can be taxing on Mark's patience. During his leisure time, Mark watches the Pittsburgh Pirates baseball games and religiously calls into the local radio station to win tickets and giveaways, though he has never won anything. Trained by his father, Mark is very knowledgeable about certain aspects of plumbing. He likes remodeling jobs more than simple repairs. Occasionally Mark dreams about owning his own remodeling business, but figures that he lacks the know-how to start it up.

Mark will install the Aqualair Units into seven homes this year in the greater Pittsburgh area.

Figure 16: Group 3 affected persona

Group members used an experience chart, as shown in Figure 17, to examine the personas and different showering scenarios to determine the features, materials, and variations that were best suited for each individual. The chart provided a basis for decision making throughout the concept design phase. They felt that this chart effectively synthesized personas with a morphological chart that they developed prior to this step.

Images of the final shower spa design and renderings are included in Figure 18 and Figure 19.

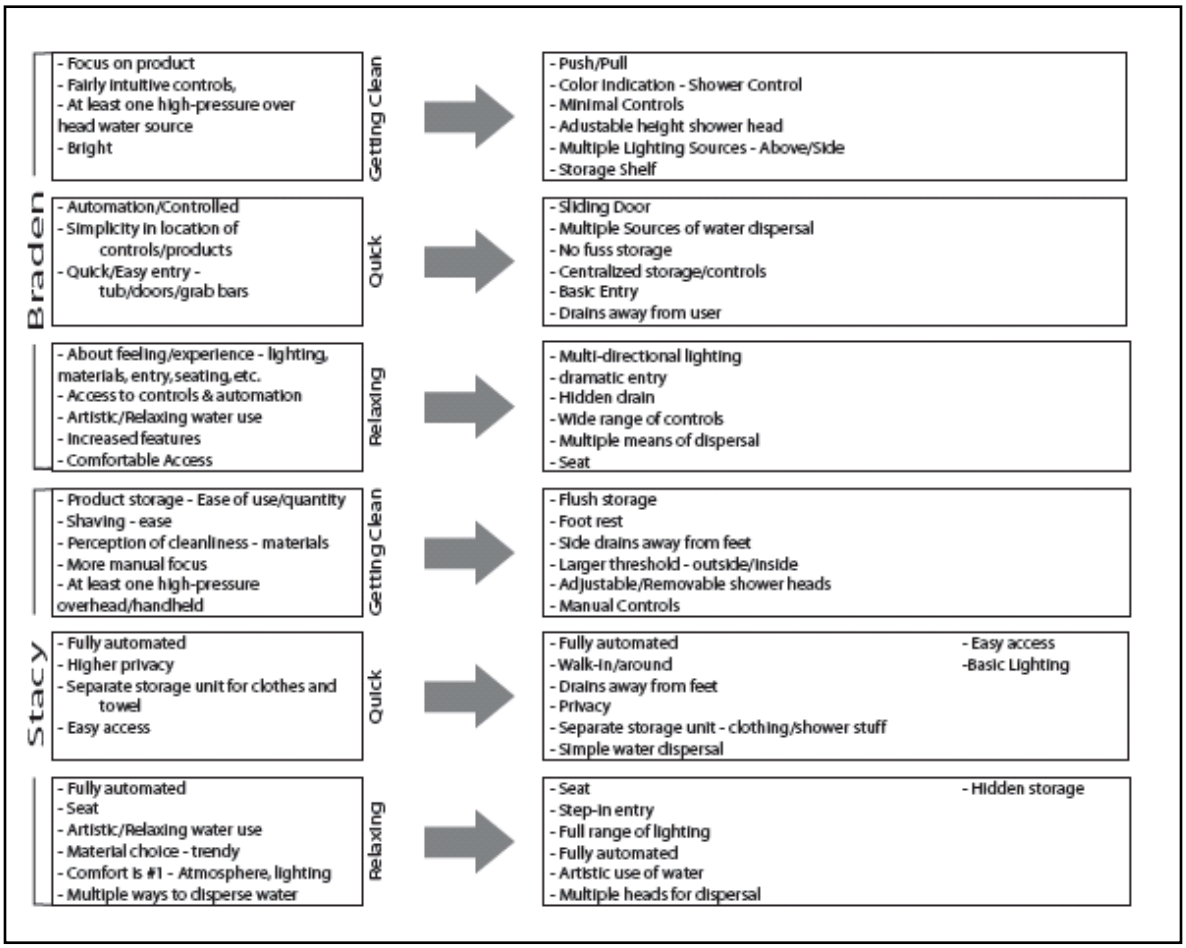


Figure 17: Group 3 experience chart

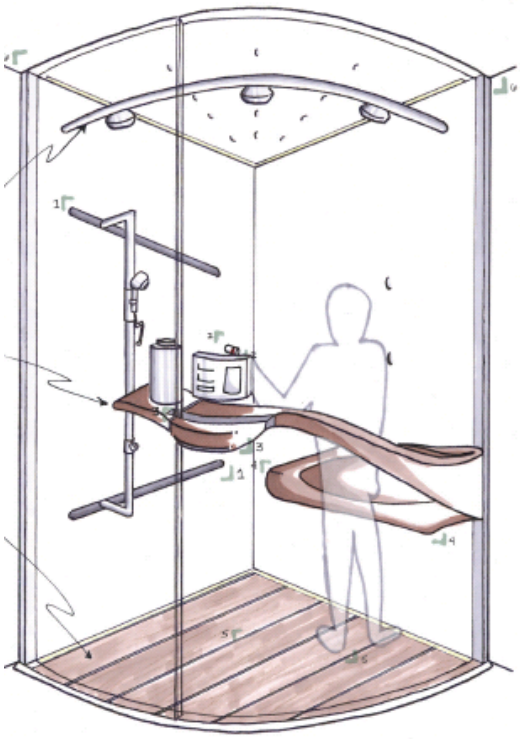


Figure 18: Group 3 concept drawing

Figure 19: Group 3 final design rendering

6.3.2.4 Group 4

This group included their primary persona, Figure 20 and Figure 21, in their final presentation and process book. The group chose Marina as a primary target user because they felt she fit the personality of an individual that would live in a loft environment, as she is trendy and embraces creative and non-traditional designs. In addition, students were ore easily to able to identify with this persona than the others they had created.

Marina Zuleika

Age: 25
Location: Cambridge, Massachusetts
Occupation: Department Head at a private high school
Status: Single, dating

Marina was raised in a family that is half Greek and half South African, so she has strong family values and was taught much about social and environmental issues as she grew up. She tries to reject mainstream society as much as she can, and hates the idea of living a conventional life, so she invested in a loft space in an old shoe factory. She enjoys shopping in antique stores as well as design blogs to help create the most unique environment she can to live in.

Figure 20: Group 4 primary persona “Marina” profile

Marina graduated from Harvard with a bachelor's degree in Art History. Currently she works as the art department head at a local private prep school. She strives to provide the best education and program for her school, so she encounters many stressful situations. She is currently in the market for a product to relieve stress, and that aesthetically fits in with her living space.

Figure 21: Group 4 primary persona "Marina" additional profile information

Tracy Henry

Age: 25
Location: Jacksonville, Florida
Occupation: Legal Assistant
Status: Single

Tracy grew up in a very conservative family that taught her that he shouldn't be married until her 30's, and should definitely not have any intimate relationships until then. Tracy finished her undergraduate studies in pre-law three years earlier. She has decided to work for a while before she goes back to school because she enjoys the not having the stress of school. Tracy lives alone in a small condo that her parents bought for her (to later use as rental property). Tracy attends church at least once a week and sometimes on Wednesdays. She relies on her friends for fun. On Saturday nights, they always go out for dinner at local restaurants.

Figure 22: Group 4 anti-persona "Tracy"

Additional, relatively unused personas, were included in the Appendix section of their book and are shown in Figure 22 and Figure 23. One of these, "Tracy," was identified as an anti-persona. All personas included names, photos, backgrounds, lifestyle information, and occupational details.

Tad Stevenson

Age: 26
Location: Cincinnati, Ohio
Occupation: Systems Engineer
Status: Engaged

Tad grew up in a middle class family and growing up, his parents emphasized the importance of a good education. Tad graduated from the University of Ohio with his degree in Computer Engineering. He has been working for Proctor & Gamble for two years now and is settling down. He plans on getting married soon, although he is waiting several years to have children. As he is establishing himself at his job, Tad's disposable income is increasing and he is willing to spend it.

Figure 23: Group 4 additional persona "Tad"

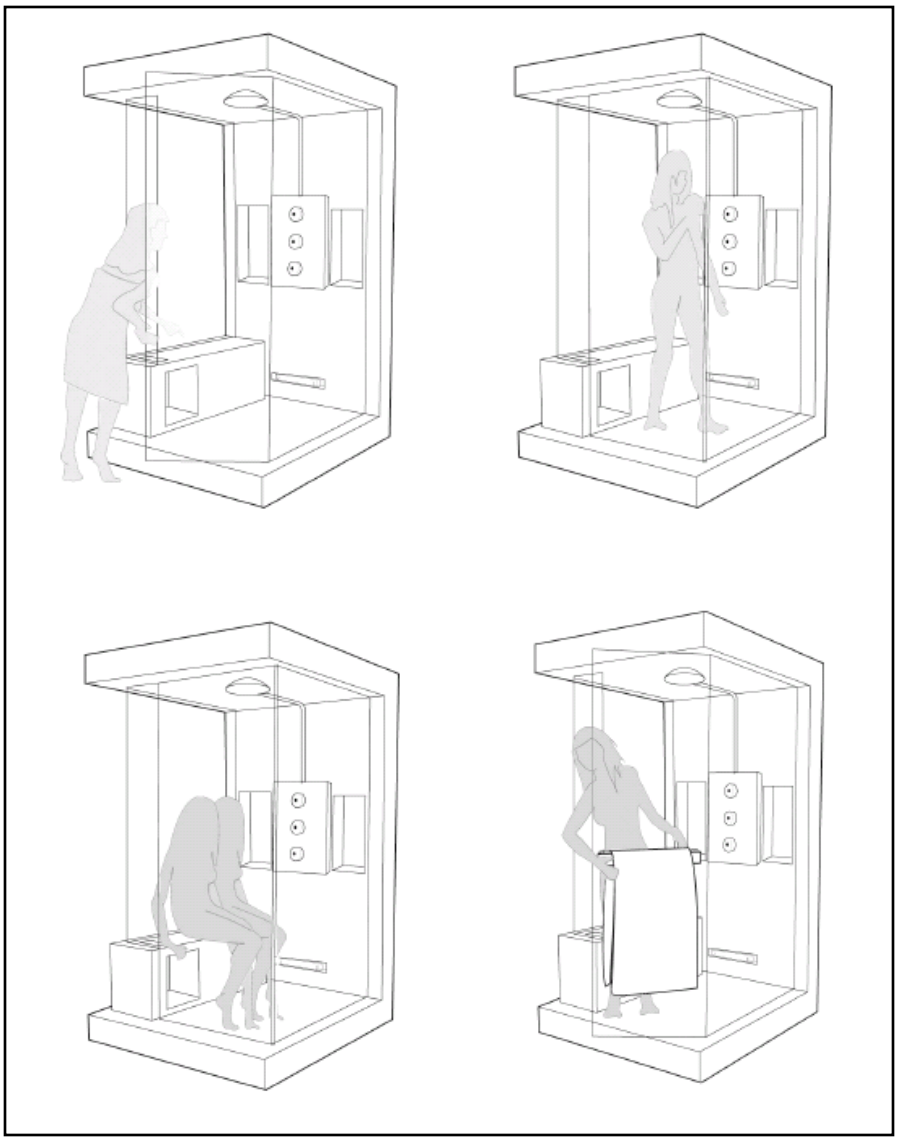


Figure 24: Group 4 shower use scenarios

Figure 24 is an example of the group's final shower spa design and use scenario for the urban loft environment.

6.3.2.5 Group 5

This group included their personas, shown in Figure 25 and Figure 26, in the final presentation and process book. These profiles included names, occupations,

background information, and family roles. Functional limitations, technological skills, and needs were also part of the profile.

The Cinderella

Catalina Francesca Romero Santana "Ginger"

Personal Profile:

Ginger is 32 years old retired dancer. Originally from Puerto Rico, Ginger gave birth to her son, Chuck at age 17. The 14 year old currently attends 8th grade at the local middle school. Ginger tries her best to keep him in line, but Chuck is having behavioral problems at school as well as at home.

Ginger married Gene in 1999 when she was silently struggling financially. Once getting married, she and Chuck moved into Gene's Miami mansion. This is when Chuck's behavioral problems began to worsen. Ginger met Mr. Chin, Chuck's principal, first during a parent-teacher conference. She then began to attend PTA meetings to see Mr. Chin. They began dating about one year ago. Gene has no knowledge of the relationship.

Ginger loves to go out clubbing on the weekends. She wants to feel younger than she is, and the party lifestyle does this for her. She recently bought herself an early birthday present: a breast enhancement. People call her cute, while wearing make-up, but she is not considered beautiful.

Ginger usually makes most of the financial decisions for the family. She does not think she needs Gene's permission, and spends his money freely. She is starting her own Interior Design business hoping to be open early next year.

"You can take the stripper out of the lounge, but you can't take the lounge out of the stripper."

Background:
*32 years old
*Son, Chuck age 14
*Married in 1999 to Gene
*Born in Puerto Rico
*No college schooling

Attributes:
*Younger
*Female
*Low technological skills
*Wealthy by marriage
*Follows the popular trends

Customer Needs:
*Large shower
*Clear orientation of what controls what
*Mid-technical needs
*A place to escape
*Keep skin healthy and young looking

Figure 25: Group 5 persona "Ginger"

The Sugar Granddaddy

Eugene Montgomery Fitzgerald "Gene"

Personal Profile:

Gene just celebrated his 100 year old birthday on February 2nd, 2006. He is a retired oil tycoon whose business is now owned by his son, Gene Jr. (66). Gene Sr. made a large profit from the business; his assets currently total over 11.4 billion dollars.

A native Texan, Gene Sr. graduated from Harvard Business School in 1938 with a Master's Degree. While at Harvard, Gene fell in love and married Judy Hillard. Their only son was born January 16, 1940. Tragically, Judy passed away in 1942 leaving Gene Sr. to raise their son alone.

Currently, Gene lives in a lavish home on Miami's "Star Island" with his wife, Ginger, live-in caretaker Mrs. Wellington, and Ginger's son Chuck. In addition to a wonderful home, Gene owns a 150 foot long yacht named "Queen Judy." But Gene's favorite possession is his 2007 platinum Maybach. Gene and his chauffeur, David share a love for polka and can be found cruising the streets of Miami with the tunes blasting.

Some of Gene's limitations include limited sight; he wears large glasses. He also wears a hearing aide because of his low hearing ability. Limited mobility is a small factor: he walks slowly with a cane. Gene's live-in caretaker, Mrs. Wellington helps with his ailments and assists him with most daily activities including showering.

"I'm in love with a stripper..."

Background:
*Born Feb. 2, 1906
*Graduated Harvard Business 1938
*Son born Jan. 16, 1940
*1st wife passed away in 1942
*Married 2nd wife in 1999
*Assets totaling 11.4 billion dollars

Attributes:
*Older
*Male
*Very low technological skills
*Very wealthy
*Low ability to shower on his own because of balance issues

Customer Needs:
*Ease of use
*Large enough entrance for user and helper
*Clear labeling on controls
*Low tech needs
*Guidance

Figure 26: Group 5 persona "Gene"

Figure 27 shows the final design for the group's shower spa. Features include a seat, handrails, and an adjustable shower head.

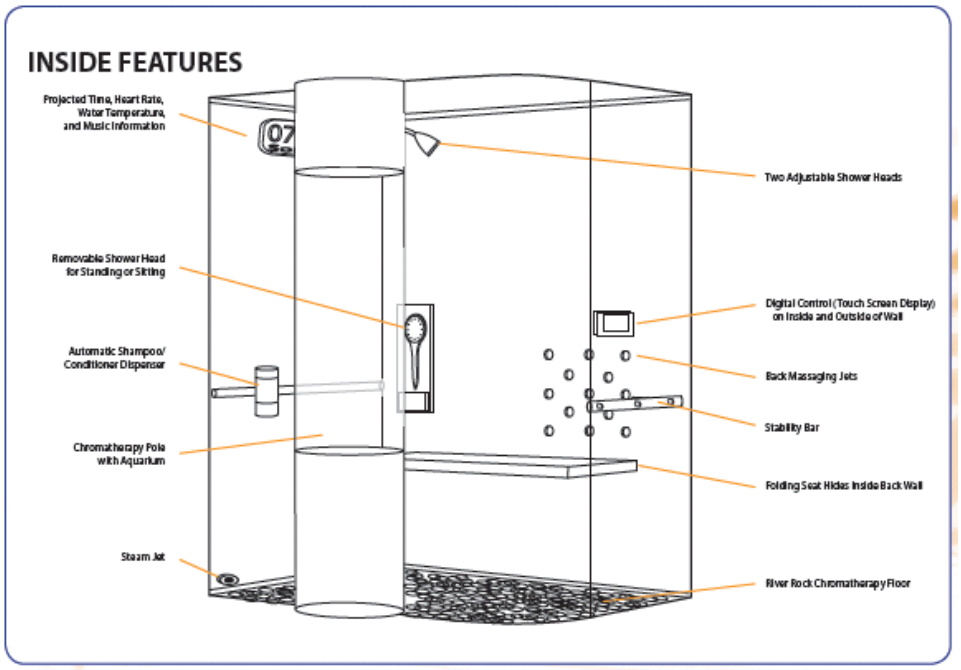


Figure 27: Group 5 final design including hand rails, seat, and adjustable shower head

6.3.2.6 Group 6

This group included their personas in the final presentation and process book. Figure 28 and Figure 29 are examples of these profiles that included catchy names, background information, attributes and lifestyle characteristics, and user needs and functional limitations.

ANITA SHOWER-SPA

BACKGROUND

- 65 years old
- Retired English teacher
- Irish-Mexican heritage
- Resides in Chapmansboro, TN
- Widow
- Husband was in military
- Remarried Randy Spa
- One son named Rick Moranis

ATTRIBUTES

- Republican
- Smoker
- Cat lover
- Enjoys eating salmon, chicken pot pie, and enchiladas
- Picadilly every Wednesday for Senior Citizens' night
- Gathers each Saturday for MahJong with five other women from Sunday school
- Drives a Crown Victoria
- Doesn't understand computers
- Doesn't have a credit card
- Watches Home Shopping Network (rarely buys)
- Shops at JC Penney, also gets her hair done there
- Keeps plastic on furniture, wood grain on everything
- Poor eyesight
- Arthritis in hands

USER NEEDS

- Large knobs
- Clear display
- User-friendly interface
- Non-slip surfaces
- Grab bars
- Separate hot & cold knobs?
- Reminders?

Figure 28: Group 6 persona example “Anita”

JUSTIN CASE

BACKGROUND

- 31 years old
- Works in Advertising
- University of Oregon Alum
- Resides in Spokane, WA
- Married to Heade Case
- 2 children: 1 son named Suit (5) and 1 daughter named Basquette
- Wife stays at home with the kids
- Income: about $60,000 a year

ATTRIBUTES

- Son just started at Private School
- Looking to advance in his career
- Not religious
- Owns a St. Bernard named Randy
- Plays on a YMCA basketball team
- Hates group showers at the Y
- Loves Sega, esp. Sonic
- Favorite shows: Frasier, Who Wants to be a Millionare (the one with Regis)
- Drinks alot of coffee and Heineken keg cans
- Getting pudgy
- Drives a Jeep Grand Cherokee
- Enjoys visiting London

USER NEEDS

- very affordable product
- sturdy, can stand up to wear and tear from kids and dog
- easy to clean, doesn't show dirt easily
- simple yet stylish
- possible upgrades as income increases
- clean, simple interface
- large, could possibly use it to wash the dog?
- plenty of storage, since there is more than one user
- tub for bathing the kids

Figure 29: Group 6 persona example “Justin”

Figures 30 – 33 show concept sketches focusing on user needs and the final designs for the group's shower spa.

Figure 30: Group 6 concept sketch examining stability in the shower

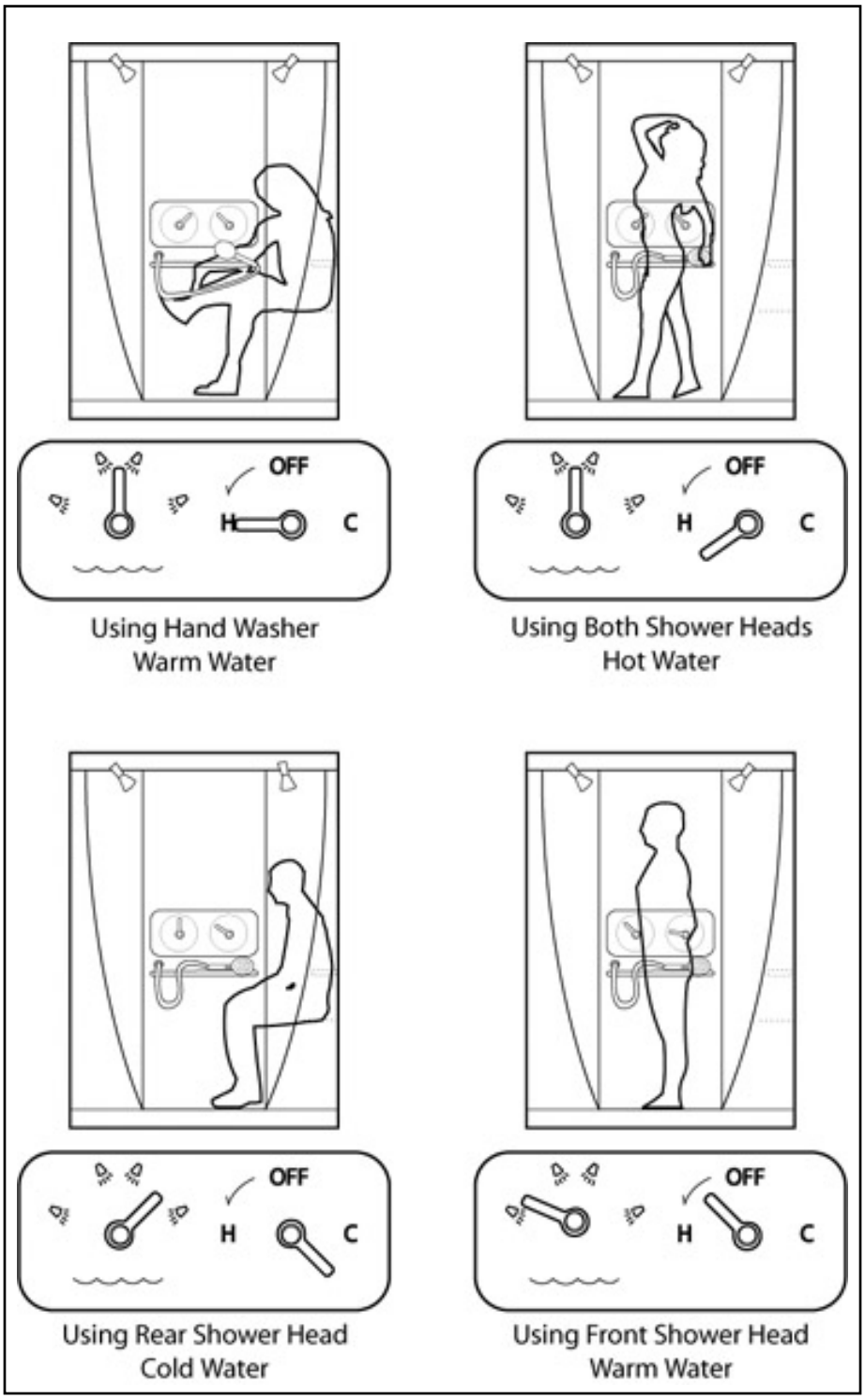


Figure 31: Group 6 seated and standing use evaluation

Figure 32: Group 6 final design including bench and grab bars

Figure 33: Group 6 final design with moveable shower head

6.3.2.7 Group 7

There was no mention of personas in Group 7's final presentation or process book. In the book, students do mention, however, that they focused on user needs and did include the following drawings and sketches (Figure 34 and Figure 35) in their materials.

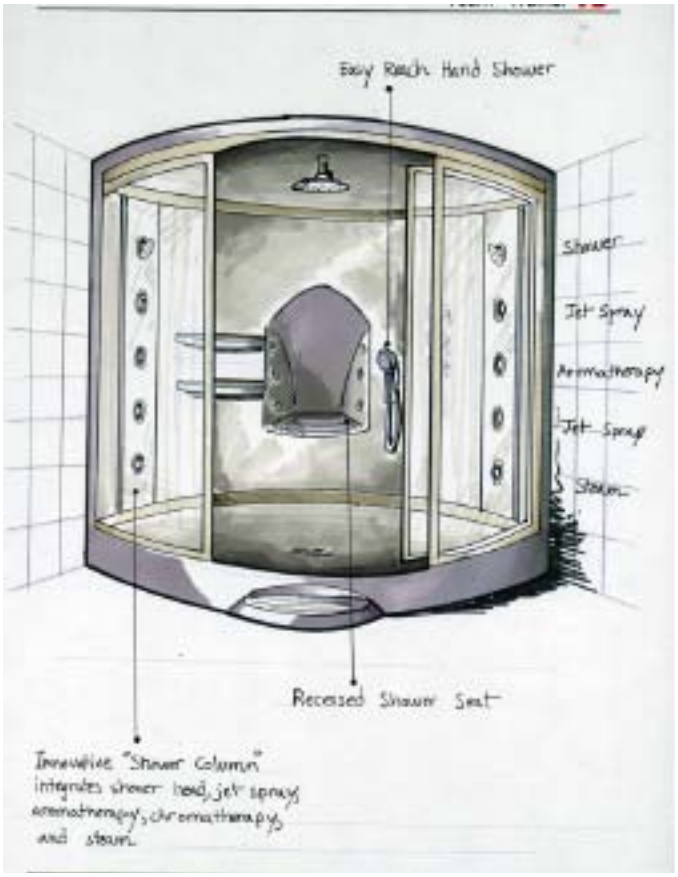


Figure 34: Group 7 concept sketch example

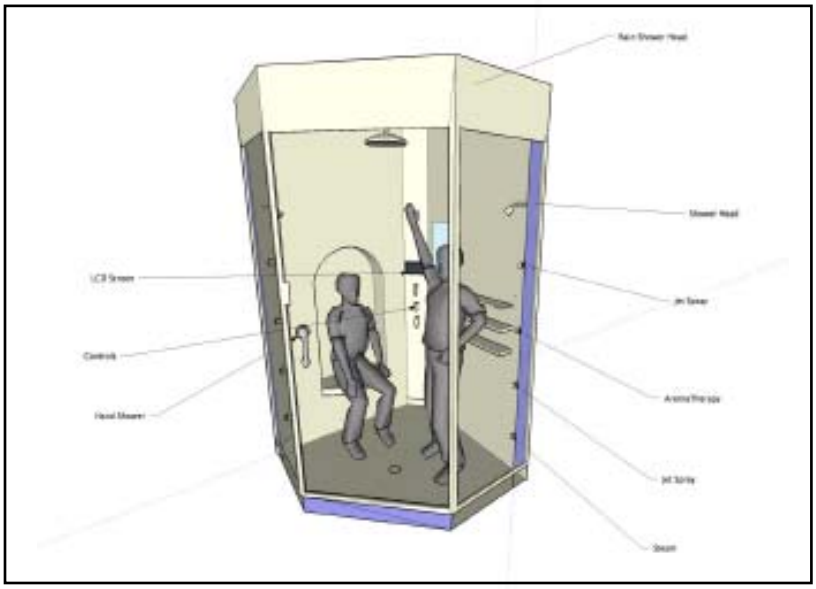


Figure 35: Group 7 shared space study

6.3.2.8 Group 8

This group included personas in all of their final project materials. Their personas shown in Figure 36 and Figure 37 included first names, slogan titles, quotations, background and lifestyle information, limitations, and user needs and goals. Although the biography section is not included in Figure 37, both personas did include this lengthy narrative section.

"The Giver"

Doloris

Gender: Female

Ethnicity: Caucasian

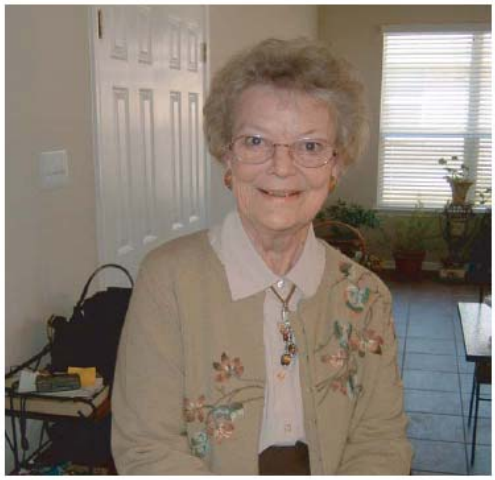
Age: 77

Hometown: Naperville, Illinois

Marital Status: Widowed

Occupation: Mother, Grandmother, volunteer at the local church

Income: Approx. $100,000



"I want something nice that will be good for me and help me get better soon, so that I can get back out there and help the community and my church."

Persona 1: Doloris

Doloris was born in 1939 in a rural farm town of Illinois. She worked as a secretary at a developing firm, where she met her future husband. They were married in 1958 and within 3 years had their daughter, Lilly. Doloris quit her job as a secretary to become a stay at home mom. Her community and church has always been very important to her, so when her family moved to Naperville, Illinois she quickly became involved in the local Presbyterian church.

Her husband, Paul Davis, died eight years ago at the age of 69. Doloris was very sad but slowly recovered and is spending more time volunteering at the church, working within the community and playing Bingo with her friends. Her husband left her a large sum of money, and between his life insurance, her social security and her husbands retirement plan, Doloris lives very comfortably. Her spending habits are very minimal, buying only what she needs to live a simple life. Her house is paid off, her Toyota Avalon was paid off four years ago and the utility bills are very low. She gives a lot of money to her daughter who now lives in Virginia with her 17 year old daughter, Lizzie, and her husband, Charles. They visit two to three times a year and mainly on holidays.

Two years ago Doloris had to have hip replacement surgery. Her church community and friends took care of her for many months while she recovered and always drove her to physical therapy. Her hips still hurts but she can move slowly and cautiously. She has tons of energy and spends lots of time baking, cooking for the church and going to matinee movies with her friends. Her hip gives her problems at night because it aches for hours so her physical therapist suggested steam or heat could help reduce the pain.

Doloris is now looking into purchasing a steam room or shower-spa to help with the pain. She would prefer to save money for church events but knows it is important to get a shower/steam room that will work and last a long time.

Figure 36: Group 8 persona "Doloris"

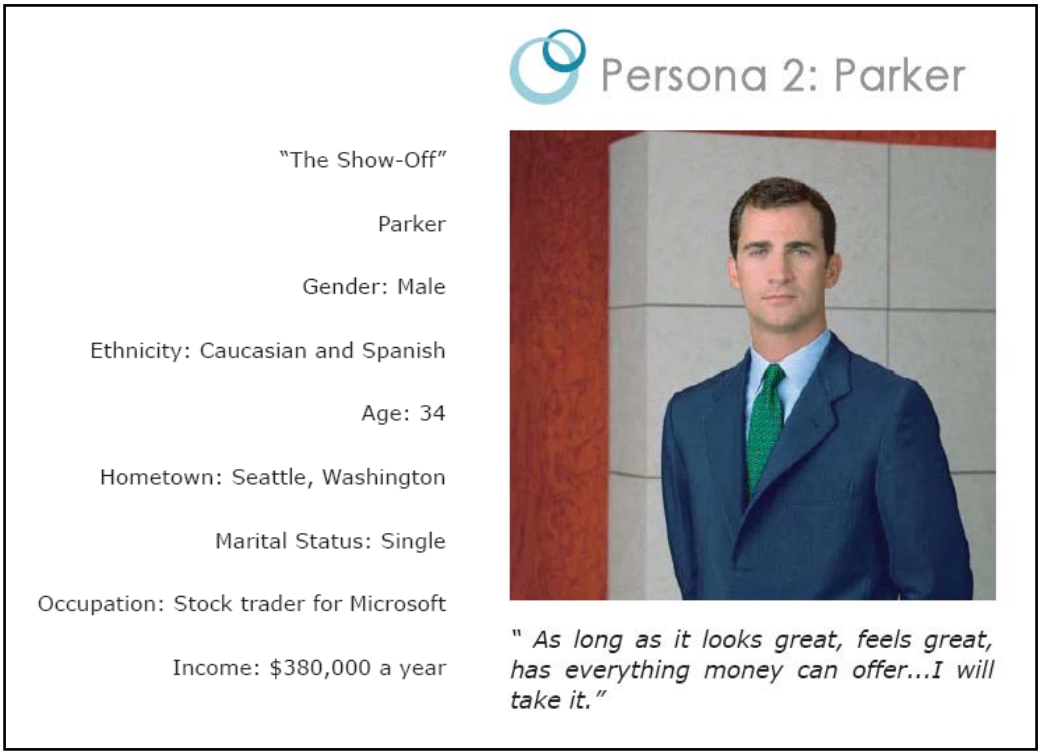


Figure 37: Group 8 persona "Parker"

Throughout their concept development, features such as height adjustable seats, benches, accessible controls and entry way accessibility were included in drawings. Their final design included a bench with handles, grab bars, and adjustable shower heads as shown in Figure 38.

Figure 38: Group 8 final design

6.3.3 Student Interviews

All eight groups of students were interviewed in the final days of their 12 week project. The following represents the key findings from each interview:

6.3.3.1 Group 1 interview with Student #2 and Student #11

Both students had used personas before in another class. They felt that the previous professor focused on the tool's use more than their current instructor. And as a result, they didn't feel that they used personas as much on this project. They noted, however, that the previous project was a shorter individual exercise.

When creating the personas, group members brainstormed together and decided that their target market resembled their parent's friends. Student #11 said that she based

two of the personas off of specific family contacts. Student #2 felt that their personas simply created three different faces for the same general user. Neither student felt like it was difficult to separate themselves from the user in terms of preferences and needs because this market was a distinctly different generation.

When asked if they remembered the personas, they struggled to recall the details. Student #11 had some knowledge of the persona profiles, but admitted that this was because she had looked at them the day before when making the final process book for the project. The personas, they said, were not used at all after their initial presentation, but both felt that they kept the market in mind throughout the process. In talking with each other, their instructor, and representatives from the company, students did not refer to specific users.

Student #11 felt that the persona creation exercise was not integral to the project and admitted that she remembered more about the personas she created for the previous class, which didn't include images, than the ones developed for this semester. In addition to the variance in instructor emphasis, she felt that the fact that the previous project was executed individually and for a new product, rather than the redesign of an existing one, made a difference. Student #2 agreed that personas might be more important and useful when working on a design where the needs of the user required definition.

6.3.3.2 Group 2 interview with Student #5, Student #7, and Student #9

Each group member created one of the three personas. When asked if they remembered their personas, all three group members recalled fairly detailed stories about their individual people. Many details of the personas created by other team

members were remembered by students, but the names of these personas were not always recalled. When asked if they felt like they needed to be a proponent for the personas that they created, Student #7 and Student #9 said that they felt relatively indifferent towards their personas. Student #5 said, however, “I had a lot more invested in Chris than I did Carole or Rachael. If it came down to it I would have been on Chris’ side in an argument.”

Prior to creating personas for this project, the group did a mind-mapping exercise to identify the issues that they wanted to address in their design. The personas, they felt were just a means of dividing these issues into three different people, but not a method for additional issue identification. Group members didn’t feel like they used the personas after they were due at the beginning of the project and felt the pace of the project didn’t allow time to go back and reference designs with their personas. Student #5 and Student #7 said that the only time they used personas after their creation was in the initial brainstorming of features. Students, did, however, feel that it was meaningful to go through the persona creation exercise in order to identify their target user and felt that these benefits came through in their design even if personas weren’t consciously used.

Student #7 and Student #9 had experience using personas in a previous class and felt that they were better utilized in that situation. In the previous course more time was allotted for the persona creation, including revision periods and feedback from the professor on the profiles. While the personas presentation given by the researcher as much more in depth than what they had received previously there wasn’t enough time to do sufficient amounts of research or to digest the concepts because of impending deadlines. One student added that her project from the previous semester focused on shoe design which is much more personalized than a shower designed for multiple types

of users. Personas, she felt, were more meaningful and beneficial for the personalized design. The personas were also helpful in defining a problem space for their previous project and in the identification of users. Because the shower spa project was done with two other students, feedback was provided from the other group members and eliminated the need to solely rely on the persona for guidance.

Overall students were happy with their final design and felt that there was a good level of thought to their solution. They all said that they would use personas again, as long as they had the time to devote to the effort

6.3.3.3 Group 3 interview with Student #3, Student #4, and Student #8

Two of the three group members had used personas previously and felt that it was harder to integrate the method in this project because the design was intended for a wider audience. One student said that her previous personas were not as in depth as the ones they produced for this project but their use was more emphasized by the instructor. She felt that personas would have been more beneficial on this project had she utilized them in the same way as her previous experience. Instead personas were lost in all of the design methods that were taught to students over the course of the project. The other student, however, felt that this persona experience was more beneficial than the previous one because information from the three different profiles fed into a morphological matrix. That information provided the foundation for an experience chart which guided much of their design process. While these charts were still specific to the personas in terms of requirements, the humanizing element of the data was lessened because at that point group members were “just trying to fill up as much of it as possible” with solutions to meet the needs.

Personas were created as a group by identifying 5-10 key characteristics for each fictional user one and then students individually filled in the details for one of these representations. Students used online research to identify salary information and based other details off of people that they knew. "The Lazy Plumber" persona included many stereotypical characteristics which were brought up by company representatives in initial conversations. All three students had a detailed knowledge of the personas that they individually created including names, lifestyles, and hobbies. Because they identified the basic characteristics as a group for all of the personas, group members said that they did not feel overly attached to the personas that they developed. While "Stacey" was identified as their primary persona, they said that as time progressed, her status became equal to their secondary persona.

Group members used the personas throughout the process including brainstorming, initial concept evaluation, and design refinement. Due to time constraints, however, model making and final design edits were directed more by what was possible and practical than personas. During the project, personas were referred to frequently, if not by name, by identifying characteristics such as "Mid-Life Crisis Guy." They were used in conversation with the instructor but not with the company. Overall students felt that personas were a critical part of the design process and helped guarantee that they were making design decisions based on their target market, rather than personal preferences.

6.3.3.4 Group 4 interview with Student #1, Student #6, and Student #10

One student had experience using personas in a previous studio on a project that investigated the broad problem of recycling. She felt that the personas that this group created were much more focused because they were targeted to a specific environment

and product. Rather than simply making the personas up as previously done, this time the group was attempting to identify the specific needs of the user.

When creating the personas the group developed a large mind map focusing on the lives of young professionals and identified three different types of people in that age range in order to generalize this information. In the pre-design/research phase of the project, group members had talked with contractors and other stakeholders including architects, interior designers, and plumbers. They used this information, along with their own ideas to create the personas. Each student created one persona based on an initial type identified in the mind mapping. All group members seemed to have a general knowledge of the personas that they created, with their anti-persona being the least memorable.

Students said that they didn't rely heavily on personas throughout the process. Rather the space that they defined and the type of people that might live in that space were more of an inspiration for the project direction. They did turn to the personas for initial brainstorming and justification for a selection of design decisions, however.

One student stated that it might have been better to introduce the concept of personas on a smaller project. Also, the group felt that it would have been a more rewarding exercise had there been more time devoted to the persona creation stage and more resources available to find valid statistics on certain types of people. When asked if they would use personas again, two members said that they would probably think about using them if they were a little less familiar with the user and designing for a product that they were unlikely to use.

6.3.3.5 Group 5 interview with Student #19, Student #22, and Student #23

Student #19 and Student #23 had experience using personas in a previous studio. One felt that it was a more structured persona exercise in this course because of the guidelines that Instructor D provided, while the other student felt a "little bit more free to make [the personas] crazy in this class." Personas were created after a group brainstorm, the recognition of extreme situations (resulting in a young party girl and a very old man with disabilities), and the identification of common needs. No additional research was done by the team members.

Personas were used primarily at the beginning for concept generation, and at the end of the process during model making. "Gene's" mobility limitations prompted them to include a seat, grab bars, reachable controls, and an adjustable hand-held shower nozzle. While building the life-size model, students measured wheelchairs to make sure that their design would accommodate those as well. Students felt that they came up with unique solutions as a result of using the personas and produced more focused designs than they would have without the tool. Rather than designing for the general idea of disability which would have been overwhelming, they were able to focus on accommodating a single representative persona. In addition, students felt that the personas provided a common language when talking to each other and with their instructor. Rather than using the names, however, the group members and the instructor often referred to personas by their defining characteristics, "Old Guy" and "Stripper."

6.3.3.6 Group 6 interview with Student #20, Student #21, and Student #24

None of the students in this group had experience creating personas prior to this study. Two of the group members felt that the personas were useful, especially when

identifying user needs, but the third student thought that personas did not have an advantage over other user consideration approaches. All students believed that the personas helped them stay focused on their original goals rather than shifting the design to include what features they would personally like.

All group members remembered the names of their personas and they attributed this to the fact that the names were so unrealistic: “Anita Showerspa” and “Justin Case.” These characters were based on personal experience and assumptions, not research. Student #20 remembered many of the details from “Justin”, but the other students did not have in depth knowledge of him. “Anita” was remembered as “basically just old” and was given arthritis to fit the functional limitations requirement that their instructor imposed.

Due to the length of the project, students felt that having “Anita” was helpful because they were able to refer back to the persona and base decisions off of her needs. Personas were used for concept generation, narrowing options down and refining designs. “Anita” however was used more frequently throughout the process because of her specific issues as an elderly woman with arthritis. They also considered her specifically during model making when creating the seat, lip at the door, and control knobs. Students appeared to have a fairly detailed knowledge of the problems that an individual with arthritis might experience when using the product.

Personas were used for group communication and students felt that was one of the greatest benefits of the tool. One student added, “We could say, “what about Justin?”, instead of saying “What about a middle class person?”” when talking to each other. For this reason, however, some students doubted that they would use personas if they were working on a project independently. Persons were also referred to by name when

communicating with the instructor, but students felt that the company would not be receptive to persona use, especially because there was not ample time in presentations to present the concept of the tool. By including personas with disabilities, students felt that they had an advantage when presenting and justifying ideas that dealt with accessibility to others. While other groups “designed a shower and then tried to explain” their decisions, one student said, their group “designed a shower [in order to] explain” the needs of their users.

One student felt that the personas were almost too specific, especially when designing for only one disability and others believed that additional personas may have been helpful. Ultimately, students said that the only reason that they used the tool throughout the process was because their instructor continued to stress its importance

6.3.3.7 Group 7 interview with Student #13, Student #14, and Student #15

Student #12 and Student #15 had experience using personas in a previous studio but felt that it was a different experience this time because more details were included and research was conducted by investigating incomes and communities online. Students primarily based their two personas off of TV characters, however. “Herbert Spooner” was based off of a character in the show Family Guy who was a war vet and used a walker. “Roxanne Wellington” was based off of the character Samantha in Sex in the City. Both were created the personas as a group.

Students said that they used the personas primarily at the beginning of the process but found that it was difficult to design for both personas because they were so divergent. In order to deal with this challenge, students ignored certain personas at different points in the process while they concentrated on the needs of their counterparts. Overall,

“Herbert” influenced the accessibility and features of the shower spa while Roxanne guided the aesthetics.

Students were skeptical about using personas again in future projects, but they did find value in considering the user while designing. Student #15 felt that personas might be more beneficial on a product that is targeted to a specific user, rather than a more general product such as a shower. For example, he added, when designing something like a helmet that makes a statement but is geared toward a very narrow market, personas would “obviously” be needed.

6.3.3.8 Group 8 interview with Student #16, Student #17, and Student #18

Two of the group members had used personas in previous classes. Student #18 felt that this experience was similar to her previous one, while Student #17 said that this process was much more detailed and directed than her other project.

Personas were created after a group brainstorming without the use of outside research. All group members had a deep understanding of the personas. Students reported using the personas frequently at the beginning of the project, but this used diminished toward the end because they “just wanted to finish.” Student #16 said that she used the personas every time she was sketching concepts and the other students noted that they used the personas in order to think about what features and qualities a younger man and older woman would want or need in the product. “Doloris,” their elder female persona, was the primary reason that a bench with handrails was included in the design, much to the dismay of Student #17 who stated that at first the personas were very helpful but “I don’t want to be putting arms on my bench right now but I have to because we brought up Doloris.”

Students referred to the characters by name and used personas as a means for communication within the group, and with their instructor. They did not, however, successfully use the personas with company representatives, partially due to the lack of time to explain the tool.

All students felt that it the time invested in creating the personas was productive and that it helped to provide some guidelines to begin the design of such a broad topic. They planned on using the tool again on future projects, especially where the user is in a different age group than their own.

6.3.4 Summary of Results from Student Interviews, Observations, and Deliverables

A summary of some of the key findings from the student interviews, project deliverables, and observations are included in Table 3 and Table 4. There were distinct differences between class sections in these results. In Instructor C's class, half of the student groups said that they did not often use the personas for design decisions and only one out of four said that personas were utilized as a means of enhancing communication. All student groups in Instructor D's section reported using personas for focus and communicating, however. While all participating students initially brainstormed key persona characteristics as a group, those students in Instructor C's class each completed one of the three personas independently. Groups in Class D, on the other hand, personas were completed by the group and NOT by one individual.

Table 3: Instructor C student group persona use as defined by key variables.

Instructor C Student Groups	**Group 1**	**Group 2**	**Group 3**	**Group 4**
Number of group members with prior experience	2	2	2	1
Number of personas created	3	3	3	3
Personas included in book		✓		✓
Personas included in final presentation	✓	✓	✓	✓
Group brainstorming for persona attributes	✓	✓	✓	✓
Personas completed by individual students	✓	✓	✓	✓
Research conducted for personas		✓	✓	✓
All group members remembered persona names			✓	✓
All group members remembered persona details		✓	✓	✓
Students reported using personas for decisions			✓	✓
Students reported using personas for communication			✓	

Table 4: Instructor D student group persona use as defined by key variables

Instructor D Student Groups	**Group 5**	**Group 6**	**Group 7**	**Group 8**
Number of group members with prior experience	2	0	2	2
Number of personas created	2	2	2	2
Personas included in book	✓	✓		✓
Personas included in final presentation	✓	✓		✓
Group brainstorming for persona attributes	✓	✓	✓	✓
Personas completed by individual students				
Research conducted for personas			✓	
All group members remembered persona names	✓	✓	✓	✓
All group members remembered persona details	✓	✓	✓	✓
Students reported using personas for decisions	✓	✓	✓	✓
Students reported using personas for communication	✓	✓	✓	✓

In addition, Table 5 includes notable impressions and comments from student groups obtained from the post-project interviews. Students in Instructor C's class commented that they would have liked more time to fully develop their personas and felt that more instructor emphasis would have encouraged them to utilize the personas more throughout the project. In addition, several groups believed that personas were not as effective in the team environment as compared to working independently because team members were able to offer feedback and help guide design decisions. A group in Instructor D's section said, on the other hand, that they felt personas were more appropriate in the group setting because of the communication benefits of the tool. Two groups also commented that personas would be more appropriate on projects that were focused on more personal products or items that don't already have an existing market

or design. Students in both classes reported benefiting from creating personas because it helped them to identify their target market and user needs.

Table 5: Key findings from student group interviews

Group	Overall persona impressions
1	Needed more instructor emphasis Not as effective for group work Not as effective for existing products
2	Not as effective for group work Not as appropriate for impersonal designs Good for identification of users and needs
3	Needed more instructor emphasis Needed more time to create personas Good for experience chart foundation
4	Designed for target environment instead Needed more time for persona creation Needed more resources for creation
5	Slogan titles were useful
6	Not as effective for individual work Used because of instructor emphasis
7	Not as appropriate for impersonal designs Most effective at the beginning phases
8	Good for identification of users and needs

6.3.5 Instructor Interviews

Both instructors lacked personal experience using personas and Instructor D had not taught the concept to students prior to this exercise. Both thought that the inclusion of the tool was beneficial to their classes and were pleased with the level of work that their students produced as a result of this assignment.

6.3.5.1 Instructor C Interview

Instructor C said that he gave a 45 minute verbal introduction of personas to his students prior to the formal presentation on the tool. In addition, there were two feedback sessions that he held with student groups to make sure that they were focusing on the correct areas in their research and development. He brought personas up 2-3 times throughout the semester and reminded students of this tool.

He felt that personas were very helpful in getting students to focus on the research, but worried that they may have been too effective and students neglected using other market identification and research tools because of it. Personas did help to define the project for students, he added, and the resulting concepts were much more differentiated than he had anticipated from the four groups. It is difficult to measure exactly how much impact they had on the outcomes, however.

All groups, in his opinion, used the personas well during the research phase and initial idea generation, but groups utilized the tool to varying degrees beyond that point. The class was asked to evaluate their designs against their initial design brief which included personas in the end, however. Group 1 used the tool at the beginning of the process, but seemed to lose track of them in the second half of the project. These students did a decent job at including user needs, but it was not perfect. He felt that Group 2 used personas well and had included them throughout their idea generation, concept refinement, and concept evaluations. For their specific goal, the personas were very effective and helped students to think through the design process. Group 3 used personas further along than Group 1, and group members were primarily focused on details and were more technically oriented. As a result, students thought the design through from those perspectives rather than usability. They had a number of great

ideas, he explained, but they didn't always verify how those ideas would be utilized. Group 4 used personas very effectively, but their group took on an entirely different approach from others by focusing on one persona and targeting their design towards her. It was a bit unexpected, he added, but interesting. Overall, Group 2 and Group 4 were more user centered in their approach to the problem than Groups 1 and 3.

Instructor C said that he would definitely use personas again in the classroom, but in the future would provide more written guidelines that students could revisit throughout the semester. In addition, he would point out more of the limitations of personas as a design tool and ensure that they were used in conjunction with other design research tools.

6.3.5.2 Instructor D Interview

Instructor D asked each of his student groups to create two personas that included a younger able bodied user and an individual that was elderly with limited ability. These users were selected because he wanted to encourage the students to consider extreme situations. And, while the company's current market was younger wealthy individuals, they were interested in expanding into the medical product field.

He felt that personas had a large impact on the design process for students. Throughout the process he constantly questioned their design decisions based on the limitations of their older persona. The younger persona, he added, generally influenced the aesthetics of the shower spa rather than the functional environment. Personas had a significant effect on feature trade offs for some groups. When full scale models were built, he explained, some groups realized that changes were necessary to their design in order to accommodate some of the limitations of their user including adding grab bars and changing the locations of controls so that they were easier to reach.

When asked if he thought these considerations of the user were a function of the inclusion of personas or his teaching of the subject matter, he explained that it was a combination of the two. Probably half of the students were asleep during his presentation on aging and disability at the beginning of the semester, he admitted, but the personas required students to focus on specific needs when designing for these users. "Designing for accessibility is one thing, but having a person that [can be used] as a simulation or at least in a conversation helped [students] to determine whether or not that design was applicable or valid for that person."

In addition to focusing designs and facilitating feature trade offs, Instructor D believed that personas enhanced communication and prevented breakdowns within the groups. Without personas every student might have otherwise had their own assumptions that they were basing decisions from. This was especially true for the persona with the disability.

He was pleased with the final designs produced by all of his student groups. He explained that he couldn't say that one group was better than another because the designs were all so different, even though they were based around the same problem. Group 5, he explained, created a 30-something ex-dancer and 90-something billionaire for their persona and their approach lacked an element of seriousness. Ultimately, however, their elderly persona required assistance in the shower and they were forced to accommodate this in their design. He felt that Group 6 included several innovative features in their drop-in shower design. They were observed using personas especially in the design of the seating system and support ledge in the shower in order to accommodate a person with limited strength or stability. In addition, this group included a moveable shower head and controls that were within reach of the shower seat. Group

7 also included a seat, grab bars, and a hand held shower control in their design. And Group 8 designed a shower that was almost a free standing object in the bathroom. They uniquely designed the shower controls so that they could be accessed from outside of the shower door and inside of the unit.

He said that he would recommend using personas again in the teaching environment but in the future would like to have students to focus more on the personas and be a bit more serious about the characters they create. Also, more time making personas and additional research might be good to include, and students should be asked to justify their persona choices. He believes that personas are most helpful in the creation of a universally designed product because the extremes of the population can be considered and designed for, increasing the likelihood that the solution will accommodate a majority of the population between these extremes.

6.3.6 Pre/Post Test

Mueller believes that design exercises can be one of the most effective methods in raising interest and awareness in accessible and universal design. Structured exercises may have the greatest impact on students, rather than designers with extensive experience [12]. In an attempt to measure the impact of personas on a design exercise with students that considered universal design and accessibility, a pre/post test was conducted. Students were instructed to "*list the issues that a person with a disability might experience when using the Shower Spa."* Instructor C's class served as a control for this section of the study because those students were not required to consider people with functional limitations when creating their personas. Instructor D did give this requirement to his class, however, and also incorporated accessibility concepts into his classroom teaching. Collected data was first analyzed on an individual student level to

identify changes in the number and types of responses from the pre to the post-test. For the purpose of this study, the term “response” or “issue” refers to any barrier, limitation, or design solution that was given as an answer for the question posed to students. Because of the open-ended style of the single question test, students often listed multiple responses.

Table 6: Individual response comparison for Instructor C’s class

Instructor C					
Student #	**Group #**	**# Responses Pre Test**	**# Responses Post Test**	**Difference (Post – Pre)**	**# Repeat Responses**
1	4	15	10	-5	1
2	1	16	10	-6	2
3	3	15	15	0	6
4	3	25	13	-12	9
5	2	15	14	-1	9
6	4	16	13	-3	4
7	2	11	17	6	5
8	3	18	8	-10	6
9	2	17	9	-8	3
10	4	9	9	0	3
11	1	19	10	-9	8
Sum		176	128		56
Average		16.00	11.64	-4.36	5.09

Table 7: Individual response comparison for Instructor D's class

Instructor D					
Student #	**Group #**	**# Responses Pre Test**	**# Responses Post Test**	**Difference (Post – Pre)**	**# Repeat Responses**
13	7	11	15	4	4
14	7	12	8	-4	1
15	7	10	7	-3	1
16	8	15	11	-4	3
17	8	19	12	-7	5
18	8	12	8	-4	5
19	5	13	9	-4	3
20	6	14	11	-3	8
21	6	6	8	2	3
22	5	14	11	-3	1
23	5	12	11	-1	0
24	6	16	7	-9	3
Sum		154	118		37
Average		12.83	9.83	-3.00	3.08

Instructor C's class of 11 students collectively reported 175 'issues' in the pre-test and 128 in the post-test. Section D's 12 students reported 154 pre-test issues and 118 post-test responses. Students in Class D, on average, had 3.2 fewer responses than Class C on the pre-test, and 1.8 fewer responses in the post-test. Table 6 and Table 7 summarize these results. Issues were considered repeated if they had similar wording, considered the same limitation, and, if applicable, considered the same function in the shower. All but one student in this study repeated at least one response from the pre to the post-test. Of the responses by Instructor C's students, 56 were repeated from the pre to the post-test. Repeat responses accounted for 37 of Class D's post-test answers,

19 fewer than the other class. Class D, on average had two fewer repeat responses per student than Class C.

Students in both sections provided unexpected and/or unconventional responses in the pre and post-tests. In most cases an unconventional response was only given by one student for that given topic and it did not fall under any major heading in the affinity mapping that was created in the next stage of analysis. These included, among others, getting hungry in the shower and not having food available, fear of water, lack of bowel control, forgetting to take a shower, and claustrophobia. Fewer of these unconventional type responses were reported in the post-test and in both classes, responses were more generalized in the post-test. In the pre-test, for example, some students focused only one type of limitation, such as a broken leg or other temporary disability. Responses in the post-test, however, focused more seriously on general concerns or solutions that would affect multiple types of disabilities. . Eight (8) students in Class C provided more generalized responses in the post test and 7 students from Class D did the same.

Using affinity mapping, all student responses, along with the participant's number, were transferred to Post-It notes and categorized by type of user need, as shown in Figure 39. Different colors were used for each class and for pre test and post-test responses, as show in Figure 40. Once the categories had been identified, colors were separated in order to count the number of pre and post-test responses within each group from each grouping, as shown in Figure 41, and duplicate responses from students within these categories were noted. These multiple groups of user need considerations were then combined into more general themes for additional analysis.

Figure 39: Affinity mapping of student pre/post test responses

Figure 40: Responses with Student #, and color coding: blue – Instructor C pre test response, pink – Instructor C post test response, green – Instructor D pre test response, and yellow – Instructor D post test response.

Figure 41: User needs categories broken down by instructor and pre/post test

The user needs and issues categories are shown in Figure 42 where the first level branches from the “Issues to Consider” box are the umbrella categories that include the attached sub-categories, or initial response groupings from students. The main umbrella categories that were identified include: cognitive issues, dexterity as it relates to control manipulation, bending and reach, accessibility, seating, balance and stability, blind and low vision considerations, and miscellaneous responses. Those grouped within the “miscellaneous” heading were those that received very few responses and did not have a clear association with any of the other, larger groupings.

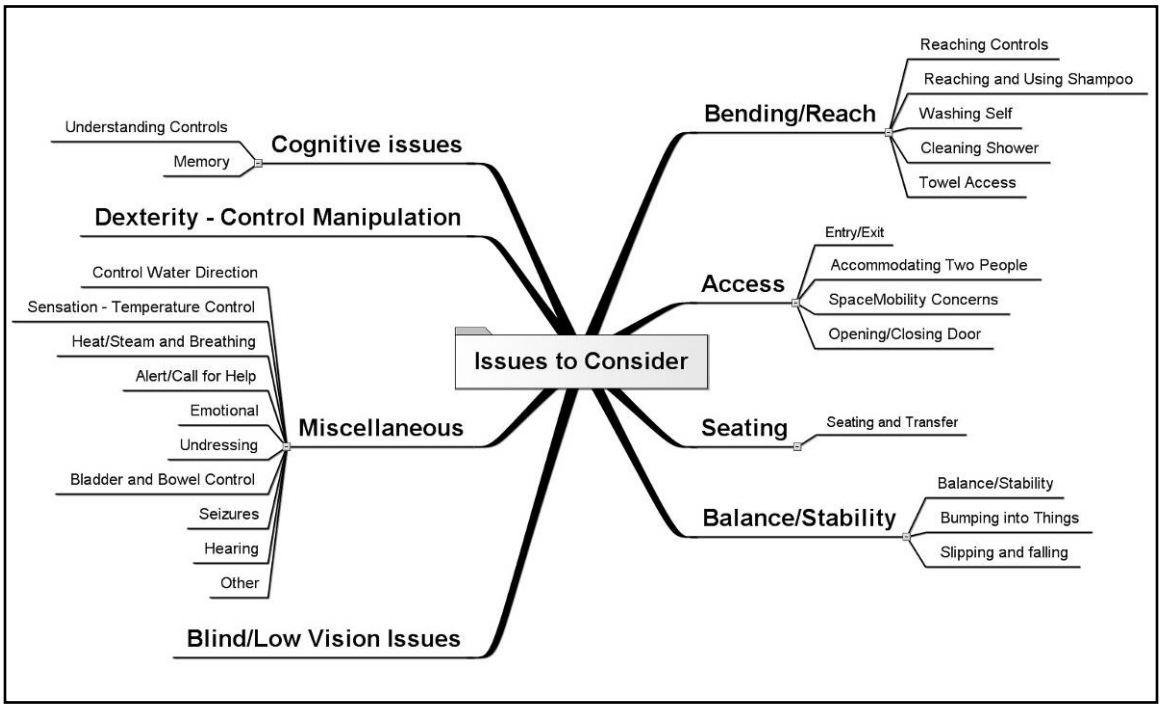


Figure 42: Student response categories from pre and post tests

The number of students that gave responses within each category was also noted to account for individuals that focused on a specific issue such as Blind/Low Vision, as opposed to other students that had a more broad disability and accessibility approach when listing responses on the test. In Class C, sensation and temperature control issues had the largest increase in student responders from the pre to the post tests, followed by understanding shower controls. For Class D students, bending and reach, along with seating considerations, were the areas of largest increase from the pre to the post tests in the number of individual students citing those concerns.

Overall, shower entry/exit accessibility received the most responses from the students in both the pre and post-tests. This consideration was noted by all students in the post-test. Blind/low vision considerations were the second most common in the pre-test but bending and reach concerns were second in the post-test. All students in Class D listed

bending and reach as an issue, and a majority of students (n=8) in Class C did the same (see APPENDIX E for more detailed results).

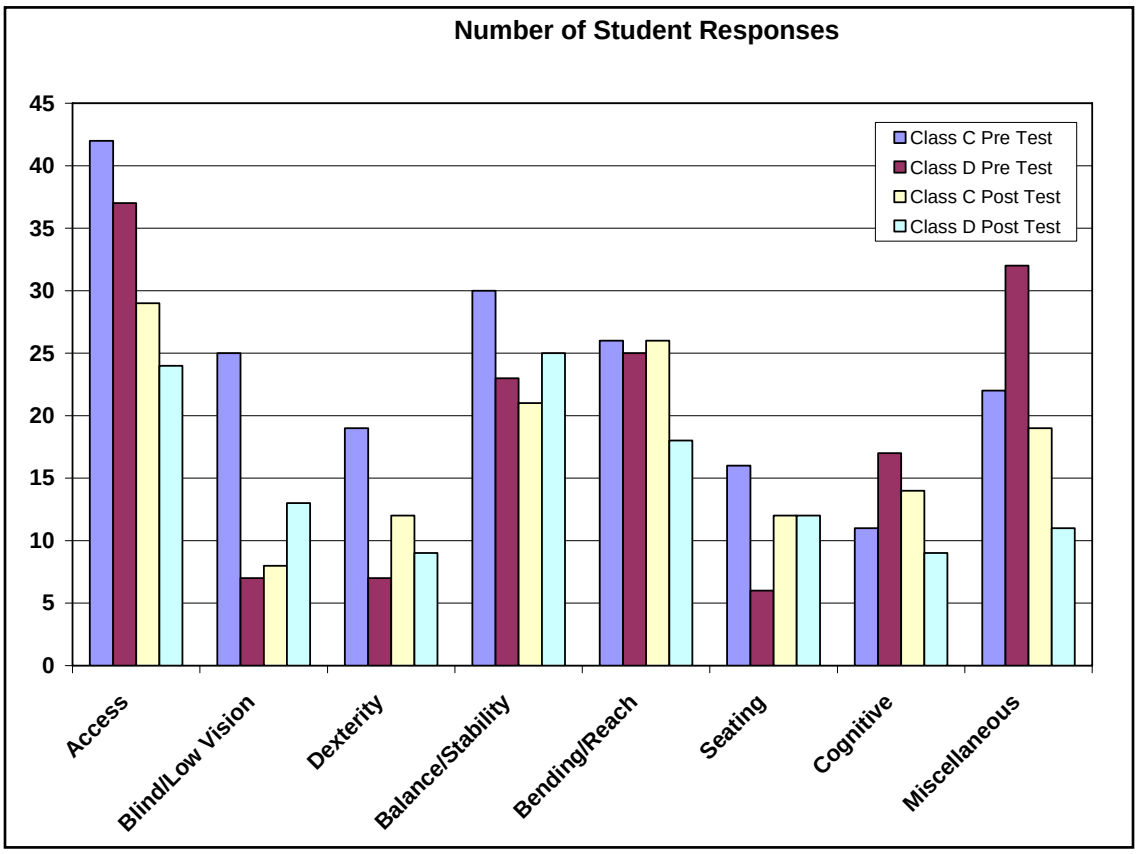


Figure 43: Responses by class for each identified issue category

Figure 43 shows the total number of responses given by students in the umbrella categories, as broken down by pre/post tests and classes. Overall, fewer miscellaneous responses were given in the post-test by both classes. This decrease was much more substantial in Class D where there was a decrease of 21 responses as opposed to Class C which had a decrease of 3 miscellaneous responses in the post-test. Pie charts in Figures 44 – 47 show how the percentage of total class responses varied by category for the two tests.

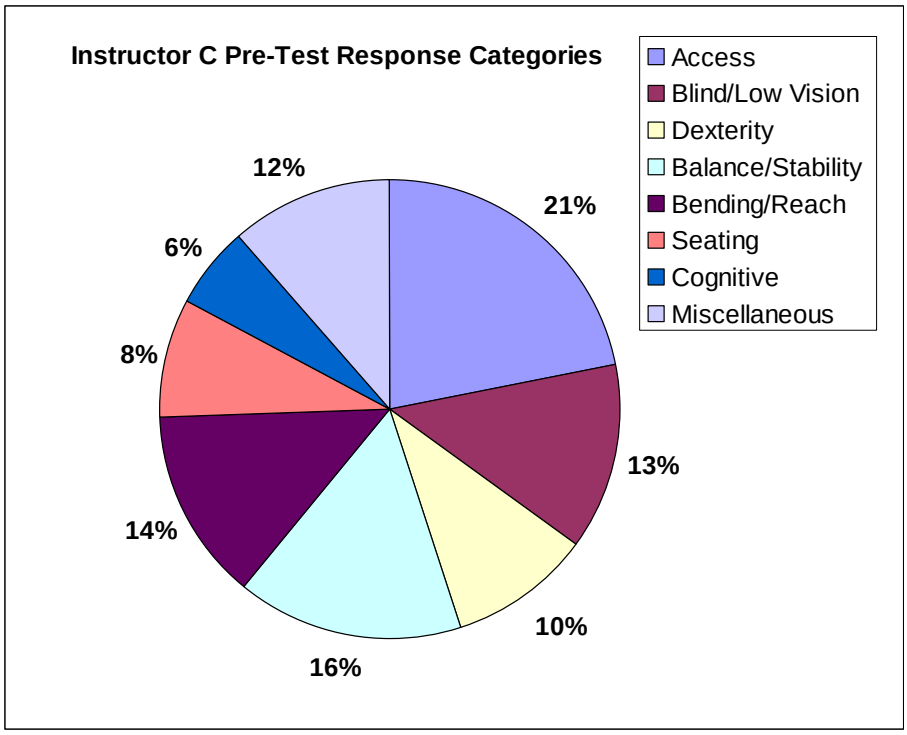


Figure 44: Instructor C pre-test response categories

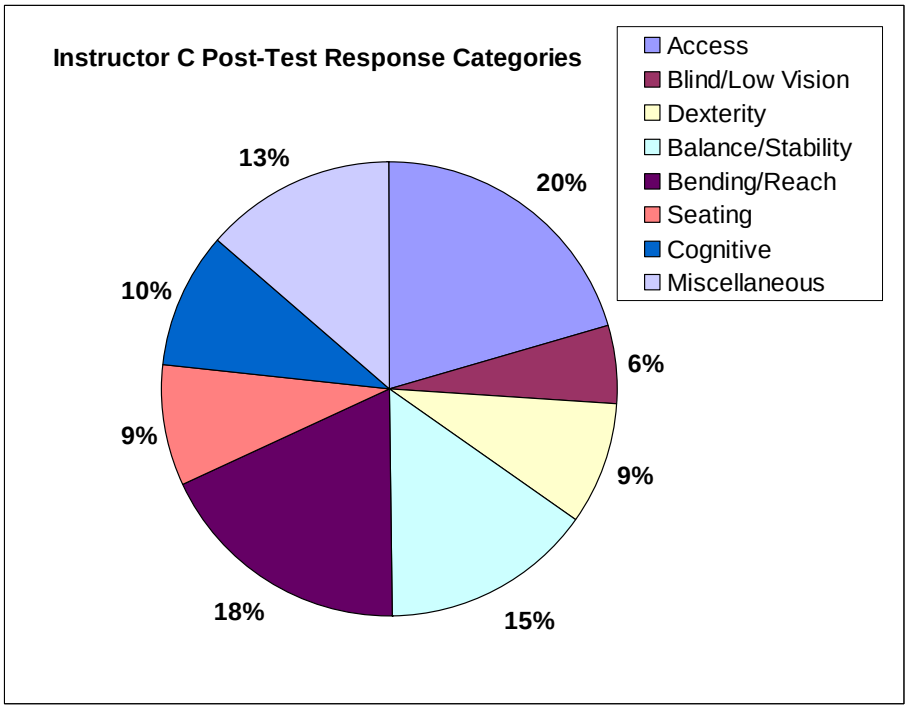


Figure 45: Instructor C post-test response categories

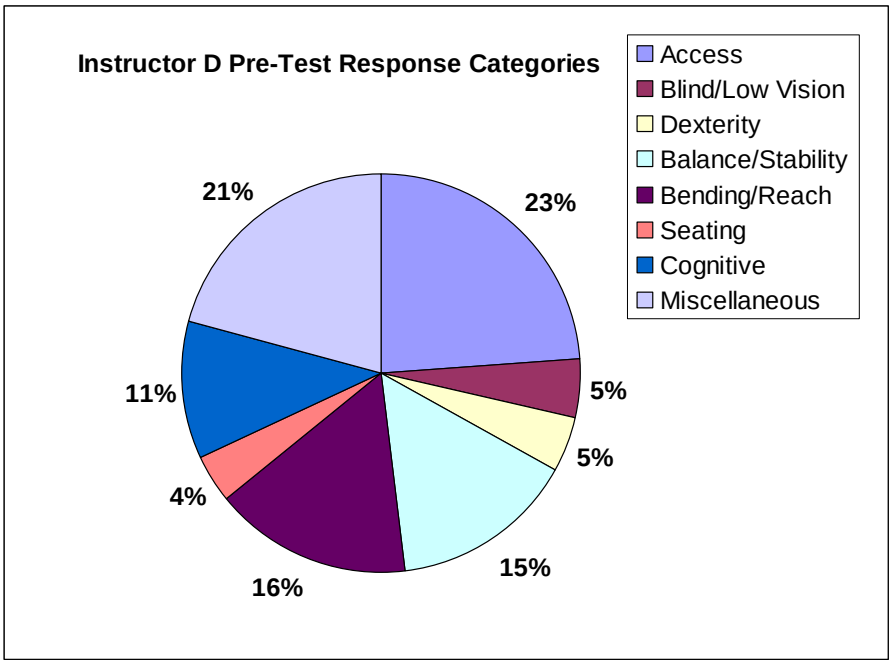


Figure 46: Instructor D pre-test response categories

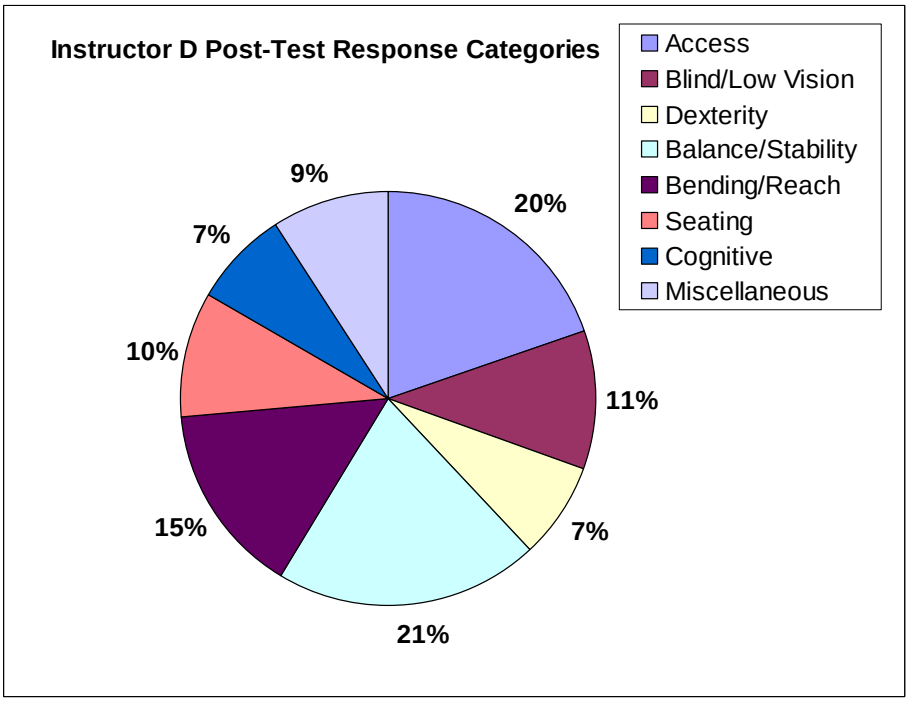


Figure 47: Instructor D post-test response categories

6.4 Discussion

Student opinions on the integration of personas in the design process varied widely in this study. While there were differentiations within classes, the overall impression of personas was indifferent to negative for Class C. Class D students held an overall higher opinion of the tool in the post project interviews, however. This may have been due to the differences in persona requirements, instructor emphasis of the tool, or topic focus. For example, Instructor C included the use of additional design tools, such as a morphological matrix, while Instructor D focused primarily on disability and accessibility considerations. Other variables that affected this difference in opinion might include the differences in the types of students that are likely to enroll for each instructor based on teaching styles, interests, and course rigor.

The two sections had very different requirements and timelines associated with their persona creation. Instructor C's students were encouraged to create a few personas that related to their target market and design goal. These user representations were due the following class period, two days after the assignment was given. On the other hand, Instructor D's students were asked to create two very different personas, one being under the age of 35 and the other over 65 years old. Additionally, one persona was required to have a functional limitation. Students were asked to present their personas one week after the assignment was given.

The personas created by students in Class C appeared to be more focused on the target market identified by groups and the resulting final concepts from each group were very different from one another. In essence, heterogeneous personas produced heterogeneous design solutions in Class C. The groups that Instructor C felt had utilized personas most effectively produced designs were specifically targeted to their intended

market and included obvious user considerations. The stringent guidelines given for persona creation in Class D resulted in groups with very similar personas and relatively analogous designs that all contained features geared toward accessibility and disability issues. Thus, homogeneous personas resulted in homogeneous design solutions. In most cases, students in Class D used their elderly persona with functional limitations to drive many of the functional design decisions because of the specific needs of that user, while the younger able bodied persona was used less frequently and often only for aesthetic considerations. This contrast in style and functional ability proved challenging for some students to reconcile, but resulted in relatively universal design solutions. These observations highlight the ability of personas to impact the focus a design toward an intended market or user, whether the intended user is defined by others (as in the case of Instructor D's guidelines) or identified by team members. It is important to note, however, that Instructor D encouraged all of his students to include a seat, grab bars, moveable shower head, and controls that were within reach in their final designs. Therefore it is difficult to completely determine how much impact the personas had on feature inclusion in his student's designs. Some students may have simply added these components to their shower spa in order to appease their instructor.

Many students in Class C used research to create their personas, but felt that they needed more time to truly develop them and to effectively utilize the tool. Although only one out of three groups reported using research as a foundation for personas in Class D, most of these students felt confident about the resulting user characterizations and their application of them. Therefore, allowing ample time for the digestion of the concept of personas after their introduction and for the creation of the characters may have an important affect on the confidence in and overall perception of the tool.

The method in which students in Class C created personas differed from that of Class D groups. All participating students brainstormed with group members about key persona attributes prior to their creation. In all instances, instructor C's students then divided up the personas and each of the three group members filled in the details a single persona independently. When interviewed, most students did not have complete knowledge of the personas that their teammates had created, and often had difficulty recalling names or details from the profile. Students did, however, have a relatively in depth knowledge of the personas that they created, in effect they had become expert informants, and in most instances these had conducted research in order to supplement the attributes identified by the team. In Class D, however, personas were created as a group, where all team members were involved in developing character details, but in most cases, no outside research was done for this information and these characteristics were based on assumptions or personal experiences. In the interviews with Instructor D's groups, all students recalled names and some details of the personas, but often did not have detailed knowledge of the characters. This may suggest that while creating personas as a group may increase general knowledge of the target users, a more personal and deeper relationship with the character comes from individually being responsible for its creation. If the writer is active within the design team, they may act as an expert on that persona and serve as a resource for other teammates. If the persona is passed on to others that have not been involved in the creation, however, their connection to the profile might be compromised. In the case of Classes C and D, instructor requirements might have impacted the creation method chosen by teams. Students in class C were generally in groups of 3 and an equal number personas were required. As time was limited before the assignment was due, students were probably inclined to equally divide the work up and each take responsibility for a single persona's creation. Class D's student groups also consisted of 3 individuals, but only 2 personas were assigned.

Therefore, the division of responsibilities could have been less clear, and along with having a longer period of time to create the personas, students may have been more inclined to work together on their creation.

Students in Class C frequently mentioned in interviews that personas were not emphasized by the instructor throughout the project timeline, while Class D students said that personas were commonly referenced by the instructor and many continued to use them throughout the process only because of this emphasis. When working with students or others with little to no experience using personas, it may be necessary to encourage the use of the tool in all stages of the process so that their application does not stop after the creation of them. On the other hand, the time spent identifying, researching, and describing target users in the beginning of the persona lifecycle may provide benefits even without their continued use throughout the process. While many students in Class C did not report using personas for design decisions or communication, groups still clearly included user needs and considerations in their final designs. By creating personas, these students gained enough of an understanding of the target market to base their subsequent design decisions, although this may have been done on a subconscious level.

Several groups created personas that lacked seriousness in this project. Other groups explained that they used slogan titles such as “The Lazy Plumber” more than the actual names of the personas when talking about their users. In several instances, team members only remembered these slogans for defining characteristics about the personas that they had created 9 weeks prior to the interview. Information provided from published literature and design professionals warn that using personas that are not entirely realistic or contain too many idiosyncratic details might hinder efforts to gain a

true understanding of the user. In this study, however, these silly personas and slogans appeared to encourage students to embrace the characters and as a result, the needs of the user were still considered in the final designs.

Most groups utilized personas for communication purposes within their group and with their instructor. No groups, however, felt that they successfully used personas to communicate with company representatives. Students explained that they felt that they didn't have time to explain the purpose of these fictional users during presentations or believed that representatives wouldn't see the value in the personas. This lack of confidence in the acceptance of the profiles with non-designers or those not directly involved in the product's design process is important to note. Had students known of an easy way to communicate to company representatives the goals of the persona tool and how it should be applied, representatives may have been invited to take part in this portion of the process.

The pre/post test section of this study aimed to measure the impact of persona use on the understanding of the limitations of people with disabilities. One of the reasons that this area was of interest was because student participants were likely to have limited knowledge of this topic, and were less likely to be able to draw on past experiences for user understanding. Results from this section may be applicable to the potential impact of personas on the understanding of any type individual with different needs or goals from those of the designer.

The use of personas with functional limitations did not result in an increase in the number of potential use issues that students listed from the pre to the post-test. Rather, most students in both classes provided fewer responses on their post-test. This trend

may be due to the fact that students were tired and/or unmotivated when the post-test was administered at the end of the semester. There was, however, a trend toward more generalized responses in the post-test in both classes. For example, rather than responding that a person with a broken leg might have difficulty stepping over the edge of the shower, as seen in the pre-rest, a post-test response was more likely to be that the shower entry should be accessible for people with limited mobility. This finding may indicate that students felt confident that they covered all practical responses issues they could think of on the post-test while still providing fewer number of items. In many pre-tests, students focused on a single disability or temporary disability such as a broken leg when listing concerns. These topics were those which students might have experienced previously or could easily be imagined. In the post test, fewer students responded with such scenarios and instead touched on a more diverse set of topics such as control manipulation, mobility, upper body strength, and balance.

One significant difference noted on the pre/post test was in the number of individual repeat responses by students in Class C and Class D. The fewer number of repeat responses given by students in Class D may indicate that they increased in disability knowledge and therefore identified a different, more diverse set of concerns in the post-test.

When considering the number of responses in each category identified through affinity mapping, Instructor C's students showed a slight shift in the percentage of responses focusing on blind/low vision to more general topics including bending/reach, balance/stability and cognitive considerations. Instructor D's class exhibited a large shift from the percentage of miscellaneous responses and unconventional in the pre test to balance/stability, blind/low vision, and seating issues in the post test. The reduction in

unconventional responses (a subcategory of the miscellaneous umbrella topic) in the post test may indicate that students became more focused on more common accessibility concerns. While this may be beneficial when designing to meet the specific needs of a user population, this trend may point to the idea that personas limited the creativity of the designers and potentially reduced the likelihood of out of the box thinking or blue sky concepts.

Although some differences were noted between classes using the pre and post testing method, few major dissimilarities could be identified. No differences were observed between group responses and therefore it was impossible to associate persona content or creation methods with an increase in learning.

The pre/post test was worded as an open ended response in order to give students flexibility in their answering method. At the time of the pre-test administration, it was unclear what restrictions professors would place on the persona assignment and what information, with regard to disability would be provided throughout the semester. Therefore, a more objective, quantitative test in the form of a questionnaire that focused on specific disability knowledge was not given to students. In hindsight, this methodology may have provided more concrete findings for this portion of study.

6.5 Conclusions

Introducing personas into the design process for students enhanced project focus and understanding of target users. While not all students felt that they used personas to their fullest extent, most saw value in the tool and said that they were likely to employ it in future projects. Some students felt that personas would be more valuable on individual,

rather than group projects because of their ability to provide feedback and ideas in the absence of teammates.

Others believed that the benefits in communication that the tool provided made it more beneficial in the group environment. Many students felt comfortable talking about their target user by name or key attribute. In addition, other group members easily understood the ideas that were being communicated by the persona without the need for additional explanation. Instructors also used personas as a means of talking with students about design decisions and in order to evaluate designs against original goals or assignment specifications.

If all group members actively take part in key attribute identification of target users prior to persona creation, it is likely to result in a basic level of understanding and common language by all involved, regardless of who is responsible for the final details of the profile. An expert informant may be created by having one person take on the responsibilities of humanizing a single persona and then sharing this information with the team. If no team members are involved in the brainstorming or writing of the personas, the likelihood of their understanding of and connection to the persona may be diminished.

All persona profiles contained relatively the same categories of information including pictures, names, backgrounds, and user needs. Much of the detailed information was not recalled when students were asked to talk about the personas that they created at the end of the project. However, fun and unique characteristics, as well as slogan titles, were remembered more vividly than other attributes. And, in the cases where students based information off of other individuals (either TV characters or people they knew),

characteristics often were referenced back to the original forms of inspiration. Regardless of how persona content was worded or the level of seriousness involved an increase in project focus and user understanding was evident in all projects.

In the educational environment, the degree to which the instructor emphasizes the use of personas throughout the project appears to impact the tools integration into the student design process and overall perception of the value of its inclusion. This study also showed that it is important to allow ample time for personas to be digested, researched and created so that students feel confident in the validity of their user representations.

Students utilizing personas with disabilities did show a relatively in-depth understanding of the needs of their target user through post project interviews and deliverables. Additionally, students using these personas showed an increase in knowledge of general accessibility considerations and included fewer ‘unconventional’ responses on the post-test following the persona’s use. It is unclear to what extent personas had on the increase of knowledge of physical limitations and disability, however, because of confounding factors including instructor expertise and interests.

CHAPTER 7: DISCUSSION

Industry interviews and student design projects confirmed much of what was reported in available literature about the benefits of personas. A majority of design professionals agreed that personas enhance project focus by providing an increased understanding of the target user and by narrowing the boundaries for a design solution. Student work also showed these same benefits. In addition, the ability for personas to increase communication within design groups and with stakeholders was also verified. As revealed through industry interviews, the use of personas has bridged gaps between stakeholder groups by creating a common language and encouraged an open dialog between individuals about the true needs of the user. Personas have also been successfully used to communicate complex research findings to design teams, clients, and manufacturers. Student group interviews similarly found that personas enhanced team communication, as well as interactions between instructors and students, because of the ability for a single user representation to stand for a large body of complex knowledge and assumptions.

Personas may also provide an effective means of communicating the needs and goals of special user groups to a broad audience because of the tool's ability to create empathetic focus by humanizing statistical and often technical information. Literature and industry interview data supported this idea and showed potential for persona application in the field of universal and accessible design. One of the goals of the student persona utilization study was to examine the use of personas that represented people with disabilities. A pre/post test was given to students in both classes. It revealed that those which included personas with disabilities increased the students' focus on general accessibility concerns. It also reduced the number of unconventional and/or

impractical responses more so than their peers who did not include disability characteristics in their users. In interviews with students, those who used personas with disabilities appeared to have a relatively detailed understanding of the functional limitations of the user and had designed appropriately for these considerations. In addition, most groups found that personas were an effective means of communicating the complex nature of their user in an efficient way. It is difficult, however, to differentiate between the impact of the persona and the impact of the instructor on this study. While this application shows promise, a more controlled research environment is necessary for more conclusive results.

Interviews with design professionals revealed that the use of descriptive names or slogan titles for personas, rather than typical 'people' names, may enhance their ability to be memorable. Interviews with student groups also discovered similar findings. In several cases students quickly remembered the names and details for unconventional or humorous persona profiles, even when group members had stated that they had not used the personas throughout the design process. While it is risky to create personas that lack seriousness or believability for many reasons, this method did, at least on some level, create awareness of the target user. Once students recalled these unique details, it appeared easy for them to recollect the more serious and applicable needs and goals of the persona.

Student use of personas also revealed that instructor emphasis on the inclusion of personas had a significant impact on the amount that the tool was utilized by groups. In addition, students' overall perception (positive or negative) of the integration of personas in the design process appeared to correlate with the level of involvement of the instructor and the complexity of the users that were being represented. This indicates that in the

educational environment students may need additional persuasion in order to see the personas through the entire design process. It could be presumed that these findings are applicable in industry as well, where team leaders may need to provide encouragement for the use of the tool over the course of a project when using personas with designers who have limited familiarity with the method. These findings are similar to those published by Grudin and Pruitt that cite management buy-in as an important factor in success of persona implementation.

Students who did not report using personas throughout the entire process may have still benefited from creating them, however. While in many cases the actual persona profiles were not referenced in communication or consulted for feature trade-offs, students did appear to apply user-centered principles to many of their design decisions. By investing time in identifying the target user and his behaviors, needs, lifestyles, and goals, student groups created empathy for the persona and focus in their design process. This shared body of knowledge impacted future decisions and in many cases, resulted in a well defined, appropriately targeted, and cohesive final design. Therefore, it may not be necessary for designers to apply personas to all stages of design. This assumption can only be made, however, if the designers have taken part in the creation of personas or user research. For example, if a persona is handed over to a designer without his involvement in its creation, it is unlikely that he will truly benefit from simply reading over the document and not actively applying it to his process.

Literature recommends that designers participate in the data collection and creation of the personas that they use in order to enhance the understanding of the end user. Industry interviews supported this idea in that subjects often remembered details about personas they had written or, in some cases, recalled the users that they had met while

conducting the research. It is difficult, however, to include every potential designer or stakeholder in the persona development process. The persona creation study that utilized participatory research revealed that while participants had limited knowledge or experience creating personas, resulting profiles all included similar themes and formats regardless of data collection method. In addition, details that were included for each user type were closely related and might easily be mapped to form a single composite persona. Therefore, there may be potential for multiple members of a design team who are unable to participate in all aspects of the research/creation phases to be involved in a meaningful way. With minimal training, multiple persons could seemingly collect data from individuals, thereby gaining firsthand knowledge of the needs of the user, which could then be combined into realistic and representative composite personas.

The difference in persona creation methods employed by student groups is also important to note. Students in Class C brainstormed as a group to define key attributes of each of their three personas. Individual group members then completed a persona description independently and many students included some elements of research for this process. As a result, group members had a general knowledge of all three personas used on their projects and an in depth understanding of the persona that they had written. Class D students, on the other hand, brainstormed key persona attributes as a group. Then, as a team and in most cases without any additional research, they completed the profiles of their two representative users.

In interviews these students had a more substantial knowledge of their group's personas, but few students had an in-depth understanding of a single persona that could be compared to that of students in Class C. The method that Class D students used resulted in a group comprised of expert informants while still maintaining a general

knowledge base within the group. This methodology may have applications in industry where team members have the opportunity to participate in the creation of the personas they are using. This technique has the potential to enhance project focus and understanding of the user while actively engaging team members in the process.

Instructors for the student design project gave very different guidelines to their students for personas. Instructor C allowed for flexibility in the types of personas that were created and encouraged students to focus their efforts on the specific target market that they had identified. The resulting personas varied significantly from group to group, as did the final design solutions. Instructor D's class, on the other hand was given very stringent guidelines for their personas. These restrictions resulted in a relatively homogeneous set of personas between groups and yielded similarly homogeneous design solutions. While there were differences in styles and technologies in the final designs from groups in Class D, user-centered feature inclusion was almost identical across teams. One of the concerns raised in the design industry interviews was that personas lack the ability to be replicated and verified. While the idea of homogeneous personas yielding homogeneous results does not address the idea of the replication of the actual persona, it does raise an interesting point about the possibility of personas to reproduce design solutions. It should be noted, however that the results in the classroom may have been impacted by Instructor D's teaching style and suggestions to teams throughout the 12-week project. Therefore a more controlled study of this theory is necessary.

Industry interviews found that personas lack a clear definition, methodology, and understanding of how to use the tool among members of the design community. As a result, these issues have caused many to use personas with caution or reject the tool

altogether. Others have been encouraged to augment the process for creating and using personas in order to enhance their reliability and trustworthiness.

Between the review of literature and design industry interviews, for example, personas have been described as assumption based, ad-hoc, hypothetical, provisional, and data-driven representations of users. Data-driven methodologies have included: basing personas off of market segmentation data, relying on information obtained from one individual to form a single persona, conducting months of rigorous ethnographic and usability research on hundreds of participants for a handful of personas, and studying users recruited using hypothetical personas as participant screeners. Other persona 'types' have relied on: internet searches, online statistics, assumptions of designers, information from people who have contact with actual users, stereotypes, and the reuse or repurposing of personas created for other projects. It is no wonder that there is confusion within the community about the reliability of this tool. While each of these types of personas and methodologies have been reported as successful in at least some applications, they are drastically different from one another. A system of persona categorization based on development strategy would provide common vocabulary from which designers could make informed decisions about the use of the tool.

While Cooper and Norman espouse the creation of precise personas, Grudin and Pruitt's support for accuracy appears to have more influence in convincing designers of the validity of the tool. A precision focus, however, may be appropriate when utilizing assumption based personas. Concerns voiced by industry professionals included the oversimplification of the variance between individual users and a lack of ability to differentiate between persona details based on research data and that which is based on assumptions. In order to enhance the focus on persona accuracy, many have employed

strategies to provide a clear relationship between user research data and the resulting personas. This has included linking specific persona characteristics in presentations or briefs to supporting research data, providing access to video of actual users obtained during research sessions, and creating shared documents or folders that house all persona-related information. In addition, several interview subjects had explored the use of ethnographic research and persona databases. Many feel that database technology has great potential for enhancing qualitative data analysis and for providing a more interactive way to use personas.

Little information was revealed through the review of current literature on the appropriateness of persona use, both with regard to project type and audience. Industry interviews, however, found that designers do not always see personas as a suitable method for all projects. Some felt that personas were not appropriate for short term undertakings or those with limited resources. In addition, the level of acceptance of personas was reported to vary by discipline. For example, one subject said that personas had been less successful with software developers than designers. Others believed that personas were more beneficial in the field of interaction design than industrial design because of the need for an understanding of the user on a cognitive level.

Students raised additional concerns about this topic. Some groups felt that personas were less beneficial in a team setting because of the ability for other group members to provide response to design decisions. This is in contrast to individual design projects, which are common in the industrial design curriculum, where students felt that a persona is able to provide a source of valuable feedback. In addition, personas were viewed as more beneficial for the design of new products where the user group requires

identification, rather than on the redesign of existing products with a known market. Finally, several students felt that the application of personas was more appropriate for products that have an intimate connection with the user, such as wearable designs, rather than items that aim to be universally designed or cater to a spectrum of users. Others would argue, however, that personas are most valuable when designing for users who require increased understanding because their needs differ from those of the designer. This is often the case in many universal design applications. These statements reveal the need for additional research in this area to identify when personas can provide the most value in a project.

CHAPTER 8: CONCLUSIONS

Personas do provide an increased understanding of others throughout the design process. They increase the understanding of the intended user by efficiently communicating research findings and eliciting empathy from individual designers. Personas have also been shown to enhance understanding between team members by providing a common vocabulary and a reference point for which to base design decisions. The tool also has successfully been used to communicate knowledge between stakeholder groups about the behaviors, needs and goals of certain populations. Thus personas truly are a tool for understanding others.

Many factors influence the effectiveness of the persona tool. Its impact on understanding and communication is greatest when professionals take part in initial user research. The ability to remember a persona is enhanced by the type content included and the tone of the profile. In addition, the appropriateness of the tool's integration into the design process is affected by product type, audience, and project resources. In the educational setting, personas are best used for group projects and the tool's benefits are enhanced with increased instructor involvement its application.

This emerging design tool, however, is not without weaknesses. In order to address the concern of the reliability of the tool, a clear definition or categorization of personas based on development strategy is needed. In addition, a lack of a best practice in the field for making and using personas has created confusion among designers and researchers. The generalization of the characteristics of multiple unique individuals in the form of a single user representation hides the variability and idiosyncrasies within that population. The inclusion of database technologies and the use of personas as a complement to

other design research methods, begin to address this issue. When establishing a best practice for personas, it will be important to thoroughly examine alterations to published persona methodologies which may provide increased overall efficiency of the tool's use as well as to enhance acceptance within the design community.

APPENDIX A: DESIGN INDUSTRY CURRENT PRACTICE RESEARCH DOCUMENTS

Georgia Institute of Technology – Industrial Design Department
Project Title: Personas – Design Industry Use - Interviews
Investigators: Wayne C. Chung, Karen L. Williams
Consent title: Main 12/05/05v2

Research Consent Form
You are being asked to be a volunteer in a research study.

Purpose:
The purpose of this study is:

To gain an understanding about the use of personas in the design process. Personas, or fictional user profiles based on data collected through research are currently used in many fields, including marketing, interface design, and product design. This interview will gather information regarding the creation and implementation of the personas, the use of this tool, and their perceived outcomes from industrial designer project managers, persona creators, and designers. Approximately 25 industry professionals will be included in this study from various companies and locations.

Procedures:
If you decide to be in this study, your part will involve:

A semi-structured interview lasting no longer than one hour with a researcher. Questions will cover the topics of persona creation and implementation, use, and impact on the design process. You may be audio-taped during this interview.

Risks/Discomforts
The following risks/discomforts may occur as a result of your participation in this study:

The risks involved are no greater than those involved in daily activities such as discussing your process with another individual.

Benefits
The following benefits to you are possible as a result of being in this study:

You are not likely to benefit in any way from joining this study. But we hope that information produced from this study will help the design community gain a better understanding of the persona tool and it's potential in future design projects.

Compensation to You

There will be no monetary compensation for participating in this study.

Confidentiality

The following procedures will be followed to keep your personal information confidential in this study: The data that is collected about you will be kept private to the extent allowed by law. To protect your privacy, your records will be kept under a code number rather than by name. Your records will be kept in locked files and only study staff will be allowed to look at them. Your name will not appear when results of this study are presented or published. The nature of your company and role within that company may

be included in the results, however. If at any time you wish for certain identifying information to be withheld from the research results, please notify the researcher and you will be accommodated.

Audio tapes may be used during this interview in order to record accurate statements for later research analysis. Only authorized researchers on this study will have access to these tapes. The tapes will be kept in a secure and locked location. Once this study has ended and all necessary information has been collected, the tapes will be erased.

In the case that you are providing information via email, you should be aware, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

To make sure that this research is being carried out in the proper way, the Georgia Institute of Technology IRB may review study records. The Office of Human Research Protections may also look at study records.

Costs to You

There will be no cost to you for participating in this study

Subject Rights

Your participation in this study is voluntary. You do not have to be in this study if you don't want to be.

You have the right to change your mind and leave the study at any time without giving any reason, and without penalty.

Any new information that may make you change your mind about being in this study will be given to you.

You will be given a copy of this consent form to keep.

You do not waive any of your legal rights by signing this consent form.

Questions about the Study or Your Rights as a Research Subject

If you have any questions about the study, you may contact Wayne Chung at telephone (404) 385-4982.

If you have any questions about your rights as a research subject, you may contact Ms. Melanie Clark, Georgia Institute of Technology at (404) 894-6942.

If you sign below, it means that you have read (or have had read to you) the information given in this consent form, and you would like to be a volunteer in this study.

Industry Interview Questions for the Project Manager

Creation and Implementation

- **How long** have you been using personas?
- What was **done before** personas were implemented?
- What l**ed your group to implementing** personas as a tool in the design process?
- Was **upper management** involved in this decision?
- What were your **experiences the first time** you or your group used personas in your process?
- What **changes occurred** when the design team members used this process?

- How are the personas initially **developed**?
- Are the personas used typically **created by design team members or others**?

Use

- Do you use personas on **every project**?
    - If not, how do you decide when to use them?
- Have your personas ever been used to describe **special populations**?
- Do you use the same personas for **multiple projects**?

- Are personas used in addition to **other user research data or tools**?
- Do you use personas as a **communication tool** with design team members or stakeholders? If so, how?
- How has using personas **altered the design process**?

Outcomes

- Do you feel that the **outcomes** (products, etc.) have been better as a result of persona use?
- Do you feel that the designs and/or processes are more **focused or efficient** when using personas?
- Do you feel that persona use has **changed the creativity** of designers?

- What do you see as the **potential** for the persona tool?
    - How can it be improved?
    - What information would you like to have in addition to the biosketch?
    - Where else can you see personas being used?

- Do you remember any **past personas** that you or your team worked with?
    - What details do you remember?

Industry Interview Questions for the People Researcher/Persona Creator

Creation and Implementation

- What **led your group to implementing** personas as a tool in the design process?
- Was **upper management** involved in this decision?
- What was **done before** personas were implemented?

- What is your **process for developing** personas?
    - **How long** does process this typically take?
    - What was **your role** in the persona creation process?
    - Are the **designers involved** in the research/creation process?

Use

- Do you use personas on **every project**?
    - If not, how do you decide when to use them?
- Do you use the same personas for **multiple projects**?
- Have your personas ever been used to describe **special populations**? (disability, aliens, etc.)
- Are personas used in addition to **other user research data or tools**?
- Do you use personas as a **communication tool** with design team members or stakeholders? If so, how?

- **What changes occurred** when the design team members used this process?
- How has using personas **altered the design process**?

Outcomes

- What information do you receive about the outcomes of the final designs?
- Do you feel that the **outcomes** (products, etc.) have been better as a result of persona use?
- Do you feel that **designs are better** when using personas?
- Do you feel that the design process is more **focused or efficient** when using personas?
- Do you feel that persona use has **limited the creativity** of designers?

- What do you see as the **potential** for the persona tool?
    - How can it be improved?
    - What information would you like to have in addition to the biosketch?
    - Where else can you see personas being used?

- Do you remember any **past personas** that you or your team worked with?
    - What details do you remember?

Industry Interview Questions for the Designer

Creation and Implementation

- **How long** have you been using personas?
- What was **done before** personas were implemented?
- What **led your group to implementing** personas as a tool in the design process?
- Was management involved in this decision?
- What were some of the **feelings** that you or other design team members experienced with this process was implemented?
- What were your **experiences the first time** you or your group used personas in your process?

- What is the **process for developing** personas in your company/team?
    - **Who** (designers, researchers, managers, etc.) is involved in creating them?
    - Did you have a role in the persona creation process?
    - **How long** does process this typically take?

Use

- Do you use **personas on every project**?
    - If not, how do you decide when to use them?
- Have your personas ever been used to describe **special populations**? (disability, aliens, etc.)
- Do you use the same personas for **multiple projects**?

- **How often do you refer** to the persona throughout the design process?
- Do you use personas in addition to **other user research data or tools**?
    - How does this tool compare to these others?
- Do you use personas as a **communication tool** with design team members or stakeholders? If so, how?

- How has using personas **altered your design process**?

Outcomes

- Does using personas give you a **better understanding of the user**, as opposed to not using them?
- Do you feel that personas help you make **better design decisions**?
- Do you feel that the outcomes (products, etc.) have been better as a result of persona use?
- Do you feel that your designs and/or process are **more focused or efficient** when using personas?
- Do you feel that persona use has **changed/augmented your creativity**?

- What do you see as the **potential** for the persona tool?
    - How can it be improved?
    - What information would you like to have in addition to the biosketch?
    - Where else can you see personas being used?
- Do you remember any **past personas** that you or your team worked with?

APPENDIX B: DESIGN INDUSTRY CURRENT PRACTICE INTERVIEW DATA

Interview Participant #1.
Notes from in-person interview - these are not verbatim responses unless otherwise noted.

- Design researcher at large technology company
- First time using them
    - 2-3 years ago formally but there were design projects that she worked on before where they talked about a "certain kind of persona"
    - Used them first formally in the studio
- Don't like them
    - Create the "Dreyfuss effect"
    - 50% person isn't really anyone – short arms and long legs
    - The persona doesn't really exist
    - They take all the qualities that they are trying to design for and put that into one person or three people. Not enough people to dissipate. It isn't a blind person, a deaf person, and a color-blind person, it becomes a blind-deaf-color-blind person. You are designing for an impossible person
- What would you do instead
    - Pilot studies or initial research and meeting real people
    - Take their information and create imaginary people around them – change their name
        - This is a one-to-one correlation, no distilling down from a group to one imaginary person
    - Talk to 50 people and take 10 that are the most important person, or the 10 that we need to design for and use those for imaginary people
    - Don't like the distillation process
- When you did use personas, what did you do?
    - HCI/ID class
    - Came up with all the people/characteristics that they were looking for and put them in buckets and designed for them
    - Disagreed with how that was done
    - Research was done but it wasn't a formal process to create the personas – the group did a lot of reading and then just came up with stuff
- Work done with real people at Her company
    - Didn't go to everyone but still got real people in that
    - Cards at work have real people on them, not imaginary people
    - Privacy issues with The company's medical?
        - As long as you aren't showing a face or last name, you can use their information.
        - Real people and blur out faces or pick a new picture
        - Can use some things internally but not published or to the public
- Process:
    - Interview people
    - Pick people you like
    - Create a card
        - How many times a day to they take medication
        - How old
        - Work history

        - Health issues, etc
    - So people that didn't meet people but are designing for them can get to know them
    - Problem with personas is that you think that these people may or may not exist. With her method, she met all of these people and can tell you that they really do exist
        - Can quantify that, it is data. At Her company, data is king
        - This summer took part in all 10 interviews
- Had to relate to cards you didn't interview?
    - Not yet, but she will
    - Probably will be difficult
    - There is something about meeting a person, there are a lot of things that you know that you can't funnel out
    - Only know what the other person that really met them tells you – it is a different experience than 10 data points on a page. See them smile, move, be
    - Don't know a person until YOU have met them
- Videos and photographs are shown to companies that are partners and other team members so that they can relate to the data, also to prove their findings – people's comments that aren't prompted.
- Would love to send engineers or other people to watch the videos – but it is their job to pull info out of the videos and pass it along
- Card is a power point slide – about 10 data points
- Made excel spreadsheets after watching video of key data points
    - Some quantitative
    - Some qualitative
- Had people keep journals – what they were feeling at the moment (what they wanted to share at least)
- Made a poster, paper, and other ways
- Gave excel sheets to engineers
- Cards will be laminated and put up around the office so people can say "Oh yea, Judy said…"
    - Don't know if it will work or not
    - Boss's idea to make these cards – has done them in the past
        - Has background in psychology, user centered stuff
- There is a database that everyone had access to – can look at all the interviews or videos
    - Questions you don't know what to ask sometimes come out of the research – that is where the video and other information is kept out there
    - People might pick up on something with the video information that they didn't know they were looking for
- When you did use personas
    - Project looking at seniors and trying to come up with a wireless device for their home
    - Given personas to the group as a goal to make something like this (personas made by Motorola)
        - Created their own personas – didn't use the ones that were given to them
        - 3 groups but all used the same personas that they created
        - All addressed something different

        - Personas created as the problem was created
        - Done in HCI class
- Character Cards
- Do these tools limit people's creativity?
    - Stuff they are doing at Her company is so far out there – 10years
        - A piece of the work has been shown interest in by other companies
        - Brand new division at Her company
            - Research group
            - Trying to become experts in the field – aging and healthcare
                - Publish and talk a lot so others will trust them
            - Send information over to product group – works with other companies to make product that isn't silicone
            - Market positioning
            - Parts of group are far out research, others more realistic
            - User centered design group also for Her company
            - All comes back to silicon
                - Use of computers in china is very different than the way it is used in the US. Use research with real people to get to these conclusions
    - Expect there to be limitations out there – it isn't a problem unless there is a problem space
    - Want to know who needs to use it and why?
    - Makes it more challenging if there are defined issues like someone that can't hear, etc
- Character cards – how often do you refer to them?
    - I look at them a lot
    - I would say the engineers never do
    - I am the only designer in my group
    - Everyone is an engineer or psychologist. All of the psychologists have done the research along with her.
    - Engineers just ask them "what do these people want" because they are supposed to have the answers
    - Doing all of these exercises (cards, excel) are helpful for her because it gives her a chance to memorize them.
- Thought about doing target market poster with many face pictures to make people notice/remember
- Idea – have a real person send emails out to the group to remind them of their research. "Hey this is Ellen, I was in your focus group this summer…"
    - Build on the Microsoft marketing ideas with their "personas" sending out emails to the group members
- Blogs
    - Use them a lot in her research
    - News groups – looked at people that are taking care of elderly parents to see what they are saying
        - Is a challenge to get information past the 3 people that find it interesting

- Large set of interviews done before she ever got there. Team of 4 people were doing it all – went to the homes and did the interviews, etc. They have more of an understanding than most.
- I wonder how people use it –
    - if you are kind of gearing your product toward this person, that is one thing
    - if you are spec-ing a product based on a persona, that is dangerous. If you are creating a product for a persona who might have a hearing loss of blah vs. these 20 people that you know have a hearing loss of x.
    - that is where you should draw the line in the sand
    - really spec-ing a real product with real quantifiable information
    - a persona might be based on quantifiable information but it itself is not usually
- Privacy issue
    - Asking for certain information can be dangerous – tried to keep some of the information high level
        - Asked how many pills they were taking each day, but didn't want to know exactly what they were taking
        - That type of information (types of medicine) could be dangerous in the wrong hands like insurance companies
- Exercise at a conference "design for the other 6 billion"
    - put a bunch of pictures on the table (varying nationalities, backgrounds, etc)
    - Who do you design for
    - Who would you like to design for
    - Who don't you design for
    - Kind of had the experience of slicing and dicing people very quickly
    - Quick glance at a person and the assumptions they each had. Sure that the assumptions that every person had would be way off
- Another problem with personas - Snap judgment process – assumptions we make by putting people into pigeon holes.
- Previous project – no personas but talked to about 20-30 people for retail project. Would be interesting to see what comes of that

Interview Participant #2.
Notes from telephone interview - these are not verbatim responses.

- Manager, hardware
- Has been writing and using personas for 3 years
    - Uses them for communicating to product team
    - Develops personas based on market segmentation data and techonomony
    - Uses same personas for hardware and software. Will augment personas if necessary.
- Heard about personas at the CHI conference or at Her company in the mid 1990's in hardware
- First time she used them she thought of personas as a creative writing exercise
- Has a human factors background and found it an easy transition with HF and marketing
- Uses personas on every project
    - Starts with core Windows personas and then augments them for certain projects
    - Breaks them down further – usage, demographics
        - More tailored to what they are doing
        - A lot of the Company personas are very broad. They need more specific personas for hardware. One COMPANY persona can lead to several personas in hardware.
    - Has not used personas for people with disabilities. That population is not a marketing issue for their projects,
- When she has introduced personas to others, she hasn't experienced any sort of resistance. Personas are mainstream at Her company.
- Personas aren't predicted.
    - They get an idea of what people would like and an idea of who the user is.
    - Then they talk directly to users
    - Personas are a way of visualizing user information
- Personas fit in at early stages of design.
- You can't get answers from personas
- They rarely go back and revamp the personas
- Personas are used at the early phase and then dropped.
- Sometimes personas are used as recruiting criteria – usability testing recruitment
- She remembers previous personas because she wrote them
- Personas provide a consistent user view – a shared view across the product team
- Personas are good to help a product team to see the differences between them and the user
- Presentation of personas
    - Power point presentation with links to supporting documents
    - All info kept on shared dive so people can access it
- Personas are a communication tool
- Potential
    - Lots of different definitions for personas

        - Some people make up stories and others use data and market information
        - There is an issue of reliability
        - She needs to know that it is based on real data
- Her background
    - Psychology, human factors, industrial design
    - Manages research at Her company
    - At Her company since 1994

Interview Participant #3.
Notes from telephone interview - these are not verbatim responses unless otherwise noted.

- Large software/hardware company
- Been working with personas since 1999
- Found out about personas at work and read the cooper book – chapters 9-11
- First persona effort was for the software project
    - Integrated software for project similar to what was done to integrate the programs of another software project
    - Boss was not sure that traditional usability efforts would work
        - Needed to understand the users
        - Told him not to come back with some big book – be creative
        - Needed audience analysis with communication – came upon personas
    - At first it was 'wacky'
    - Other people were using user archetypes and user profiles for audience analysis and costumer segmentation
    - Talked to all of those groups about personas but didn't expect everyone to use personas – there were about 400 people on the team
    - Used personas instead of other methods in order to take the abstract representation of users to the furthest degree possible in order to feel real
    - With scenarios – the description of the actor is often limited
    - With segment analysis – there is often only an abstract list of characters
    - User profiles sometimes have the detail of personas. They tend to have a lot of idiosyncratic details or are averages.
    - Personas caught on and he promoted the method to the company and the industry
- Do you always use personas?
    - Not always – it depends on the team and the product
    - On his current project he is using customer segmentation
    - Personas are really useful in the early stages, but not always the right thing
- His role at the company
    - Specific to a product team
    - Working on a new version of a hardware/software product– personas are not the centerpiece at the initial stages – but plans on bringing them in 3-4 months
- Do you recycle personas?
    - Yes – has helped the other teams to evolve the personas into something useful
    - Will repurpose the personas – sometimes using the same information or sometimes makes changes
    - Has never recycled personas for his own product projects
- Do you think that personas make the process more focused or efficient?
    - More team members in the development team know the target audience.
    - When team members have conversations about the end users they are on the same page and to the point

    - Personas streamline the decision making process and help to decide what should stay in or be taken out
    - Help to give a clear case for why
- Doesn't use personas for short projects unless using a cheaper, assumption based person not based on real data
- Sometimes uses other user centered design techniques, depending on what you get vs. the time and money invested
- Does field research studies
- There is a lot of uncertainty in the development process. Sometimes personas fit right in, other times they don't
- The software personas have been around for 2 years
- Personas for another large project have been around for about 5 years and took 2-3 months to make
    - They are not currently making new artifacts but the personas have taken on a life of their own
    - Initially the personas were created for the user experience team (the core people designing the experiences), but their use expanded to the developers, testers, marketing, training, help/support people, and beyond the core team.
    - All of these people found the personas helpful.
    - Other people haven't really altered these personas, but just added to them. Ex – the explorer people wanted the personas to include internet activity so they did more research. The same happened with the networking people
    - This has been the largest of his persona efforts
- Do personas augment creativity?
    - A well built persona opens up opportunities and creativity
    - Personas are generative
    - Underlying goals and essential qualities can be extended into new spaces and new things might be explored for them
    - Personas are a springboard for creativity – just not in the blue sky sense
    - Personas do limit options, but this is a good thing
- Personas are used in brainstorming activities
    - Focused brainstorming – what are the new features or scenarios for this persona
    - When people know a persona, they can then brainstorm what they might want to do in an area – ex. Context awareness
    - In brainstorming, assumption personas are often used
- What is the potential?
    - Linking the persona with the data
    - With the right technology behind the persona you could create a database about users (including qualitative, quantitative, and marketing data)
    - If tagged correctly, the database could put a front end face to the data query on a database
    - A group at his company internally built a similar database
        - Persona ecology
            - Contains persona information
            - Not just limited to entered personas
            - Individuals can go in an enter their own information if they are similar to certain personas

            - You can state the relationship to personas with other personas or people, instances, similarities, etc
            - 1st version an experiment, the group is now rebuilding the tool
    - Evolution of personas
        - Experienced based design
- Longhorn project
    - Large scale research – survey for initial persona info
    - Small qualitative work and contextual interviews – a few done per persona
    - Since then, regular research been done about and with personas to find out who they really are
    - After a year they did a complete review of them, revamped them to bring the personas in line with the current understanding of the users based on other research indicators
        - They ended up killing a persona and did add one too
        - No funeral for the dead persona
    - Sometimes the persona is really likeable and sometimes there are personas that no one likes

Interview Participant #4
Notes from telephone interview - these are not verbatim responses unless otherwise noted.

- Consultant
- Uses two types of personas
- Discount usability
    - Cheap, quick, easy to do
    - Instead of traditional ethnography, use knowledge within the industry and create the persona
    - Create a hypothesis of the target consumer – using trade magazines, products on the market, etc.
        - This will be 75-80% correct.
        - Good enough for clients without a lot money or new (?)
    - For larger firms with a lot of money, it will cost a minimum of $50-60,000 for an ethnographic tear-down
    - Discount techniques – can do for $5-10,000 with most of the information. Attractive for their clients (Fortune 1000 – 2000 companies)
- Other traditional ethnographic persona development
    - Create hypothetical persona – pictures, brands, etc
    - Use this as a screener to find real people
        - Observe, interview these people
- Has developed hundreds of personas
- Used personas over the pas 7-8 years
- Learned about them while in ID school – interaction design and cultural studies
    - Had a big ethnographic focus
    - Worked at a company that really used them
- Traditionally create a persona based on a real person
- Hypothesis is used to find things that you might need to look for – a framework of things to look for. Then, see if you are right.
- If it is a very specialized user, you might only need 1-2 people to base the persona on. If broader, you need a greater range of people (5-7)
- Started implementing personas at his company.
    - Still in this process
    - There are walls between design and research.
    - Designers view researchers as a hindrance
    - Researchers view designers as not paying attention.
    - Researchers aren't telling designers what to design, they are telling them about areas for opportunity for innovation
    - At his company, researchers have design backgrounds. They can talk about materials, forms, ergonomics to the designers
    - Their researchers / company is more the touchy-feely type, not numbers driven.
- Been at his company for 3.5 years.
- Personas help designer decisions – significance.
- Have personas produced better outcomes? Most of the research heavy products haven't come out to market yet.
- Also use personas for brand development
- Research is a selling point. Gives legitimacy to designers – appeals to business logic.

- Does go back and look at personas during process
- Creates personas for brands and products.
- Uses personas as visual metaphors – position them with aesthetic.
- Use style as a persona and refer back to it.
- Names are fairly literal – names are given to both brand and product personas.
- Try to create 3 personas – one in the middle and two outliers (ex landrover > jeep <hummer)
- Personas help communicate
- Some people pick up the idea of using personas faster than others.
- Communicating personas – pdf presentations, so people can keep them and they are portable. Sometimes they make boards for clients.
- Create mood boards based on styles
- How long does it take?
    - Design time is short – 2 -3 months. Use personas during this time. They don't use personas once it goes to engineering unless there are usability issues (buttons, etc)
- Remembering past personas
    - Remembers visual ones more than people personas.
    - Has empathy of the personas when he is working with them
- People tend to relate the person to someone you know. People are more aware of the characteristics and are looking for people that are like the personas.
- Normally always create new personas – don't recycle. Every client's work is their own and it is rarely a similar market.
- Creativity limited?
    - Limits creativity, but that is not a bad thing. Time is money.
    - Most designers design what they want if they can, and that is normally not right
    - Research and boundaries are a good thing
    - Helps to narrow down the focus
    - Personas are absolutely limiting and they should be.
- Other techniques
    - With personas – show visuals, attributes. (brands and colors, products they have)
    - Usage information
    - Needs analysis – what needs they have, not just features
    - Market teardown – all the other items on the market
    - Positioning
- Potential
    - Discount techniques – no one has created tools for this yet.
    - In the next 5-10 years, people will be able to make products as easy as people are able to make their own webpages and documents now.
    - People think that research is something that no one can touch.
    - The biggest bottleneck is at research because there are no tools to go and do this in order to help generate this information for design
    - Big companies can afford consultancy but even those consultants don't have a hard or constant set of tools
- Why are personas your tool of choice?
    - He worked at a company group – they started in on HCI stuff
    - Multidisciplinary approach
    - Usability perspective – how people thing, etc.

    - Cognitive science people write a lot but it doesn't give anything to empathize with.
    - Take documents and try to make them visual – which makes it easier to react to and empathize with.
    - Making it visual has been the biggest push forward
- Worked on project with a software/hardware company for elder care – closest to disability
    - Worked with low frequency radio transmission that receives data over airwaves. It was an underused technology – now used in novelty Fossil watches)
    - How can the technology be adopted into elder care space
    - Created personas – 65+ years old, different needs, visual cues, aesthetics, etc
    - Personas worked well for this project too.

Interview Participant #5.
Notes from telephone interview - these are not verbatim responses unless otherwise noted.

- Senior human factors design engineer
- Master of Industrial Arts Degree
- Medical research and product company
    - Senior Human Factors Design Engineer
    - Been at her company 3.5 years
- Worked at interaction consultancy prior to her company for 3 years
    - Worked there before graduation
- Problem with personas
    - Power of methodology
    - Previous consultancy's data-based personas focus on being clean and clear, but personas are publicized without method
    - There is a vague understanding by everyone else that hears about personas at conferences
    - People that don't use personas lash out at them
- 1st time using personas at previous interaction design consultancy
    - All junior designers go through a mentoring process with a two designer team
    - Joined the design team as a junior designer as group started using them
- Interested in process and method.
- Worked with Lane Halley (original persona method) write-up with her
- Took hypothetical design project, take steps back, what did we do?
    - Articulate, refine, sequence
    - Make bridges, earlier introduction of concepts in process
- Initial impressions were positive
    - During studies – common ideation method, but missing who, where using
    - When joined previous interaction design consultancy, saw them investing time in personas and users before designing – it was great
- Master's thesis project
    - Was stuck on project and used personas
    - Helped
    - People, desires, methods
- Do you always use personas?
    - Always
    - Have a "stable" of personas at her company so she doesn't always have to create one
- Her group consults within her company
    - Share and conceptualize personas
    - Human Factors Consideration document includes personas, context of work, what they are doing
    - Submit document to St Jude, FDA
- A chunk of work is in software development
    - The use of personas is hit of miss with those people
    - The people don't pick up on it as easily
    - Doesn't always press the use of the personas with them
    - John vs. Programmer/Operator

- Who gets into it?
    - Vaires
    - Some see potential
    - Conceptually test the design before usability testing
- She introduced personas to her company
    - They were a client when she was at previous interaction design consultancy
    - Went to work with them later
    - High level people were at previous interaction design consultancy presentation where personas were used
        - 1st big Consultancy deliverable
    - Still uses same persona set today
        - Based on solid user research
    - Introduced the Human Factors Consideration Document as a formal document to the group
- Have you changed the previous interaction design consultancy process?
    - At previous consultancy, the persona creation was self encapsulated process
        - Research > Analyze > Persona > END
        - After the validation of the personas with the company, they then got into the scenario based design
    - At her company they develop the personas and goals, and then quickly go to scenarios
        - Deliver both
        - Key usage with personas
        - Articulates more insights to a large group
    - Wouldn't say this is the best practice
        - Personas and goals then conceptual around scenarios
        - Her process short changes the process around scenarios
        - Scenario should be the forefront of design rather than the end of user research
- At her company works on custom medical device systems and imbedded laptop systems
- Hardware and product experience:
- Personas are less valuable for industrial design than interaction design
    - Interaction design has a cognitive component
    - Human understanding of user is most valuable for cognitive
        - Mental models of practice, pressures, etc
        - Abstract though around that is very difficult
    - We share an understanding of physical human body
        - Human factors concerns
        - We know size concerns
    - Differently abled people are a good opportunity, however
        - Empathy and understanding of their needs
    - There is more room for a designer to bring themselves in as a user (industrial and graphic design)
    - Interaction designers know too much
        - They are outlier to target users
        - Aren't able to project themselves – must lose ego and self in order to understand the user

        - Personas take/force you outside of yourself
- Her company didn't use personas and failed before she got there
    - Company produces the implantable medical device
    - Developed external system that speaks with the device
        - The technical, software, and clinical engineers designed it
        - Doctors and nurses were left behind in the process
        - Resulting product was ugly, inefficient, and complex
- Constantly steering toward users and explaining in terms of personas
    - There has been a fundamental shift resulting from this
- One big product out – hits field in May
    - System used in operating room to make sure that the device works properly
    - User research, personas, and concept
    - User interface a great success
- At her company, the HR group seen as only group that is capable of understanding
    - From front of the product def. cycle.
- Does it augment the creative process?
    - If persona is not done right it can hinder design
    - If the needs and goals are not captured, it can fail
        - You can constrain or miss mark your user
    - Depends on the quality of user research
- Persona hypothesis
    - Ideas about user research and who to study will guide the interview selection
    - If it isn't working, you would realize that the hypothesis is inadequate would change it to adjust
- Methodology is not a rigid thing that constrains thinking
    - It is a foundation that you can do any kind of thinking
    - Methodology is freeing, you know the steps, do the thinking, innovation is free but deeply informed. You are building on thoughts.
- A methodology is developed for Personas and Design
    - Personas devoted 1/3 of time to customer research, 1/3 of time to framework definition, 1/3 of time to details
    - At her company she wishes she could do that. Right now 75% on definition, 10% on customer research
    - a lot of time on product definition
- Size of her company is 5,000 people in the division
    - Human factors has 6 people
- Went to Stanford and majored in English and French Lit.
    - Field of design was a lightning bolt
    - Went to SF state and worked for previous consultancy in SF
- How could you improve personas
    - There is tension out there
    - It is a powerful tool but inadequately explained as a methodology and process
    - Tension needs to be resolved
    - Give a best practice
        - If you don't want to do that then call it something else

        - It would benefit and erase tension from people that don't want to use it
    - Is a big believer in best practices and without it, it does the discipline harm
    - previous consultancy has proprietary methods – they have popularized the method but are alienating people because the method is not out there
- Ideal persona
    - Large personas that are more like biographies are convoluted and lose value as a design or communication tool. There is just too much detail
    - But you do want the persona to have personality and attitude
    - SHOULD BE:
        - 1 page synopsis
        - Include 3 kinds of goals
            - Experience goals – how do they want to feel or behave
            - End goals – what do they really need to achieve and ensure that the device will work properly
            - Life goals – ex, buy a house before the age of 30
        - Should have at least one of each of these types of goals
        - Up to one page maximum biography
        - May have a separate page of work environment, context, use environment
            - It is most to have a separate but linked page to this information
        - Should have:
            - Personality
            - Clear sense of what they do
            - How they think
            - Constraints or pressures
            - Most important to have GOALS
- Additional tools used
    - Scenarios
    - Mental models

Interview Participant #6
Notes from telephone interview - these are not verbatim responses unless otherwise noted.

- Consultant
- Personas connect groups and focus on the end user
- Used personas a lot when consulting for A software company while at design consultant. Personas are big at software company
    - Software company's method is established. Do a thorough job of identifying personas
    - At design consultant they were hired to delve deeper into the 'types' identified by the software company and to bring them to life.
        - Recruited people that matched the statistics and then did in depth research to see what they were really like.
- Used personas informally over many years to summarize data and keep the design team focused.
- Has become more critical about how they are made
- Software company does an excellent job of basing personas on real people or composites of real people. They do a lot of research – who they are and then understanding them. It is an elaborate process.
- Others make personas up. They are stories. Might keep people focused on someone other than their self (good thing) but could be spending time and money on something that isn't relevant.
- Now working with an architectural firm that hasn't been influenced by human centered design. She is using personas and scenarios in new hospital design. Not as thorough as software company (a very expensive process).
- One hospital project
    - 15 different user groups with 10-12 people in each group. They consult them multiple times throughout the process.
    - Worked with nurses to initially identify groups of patients and visitors
    - Created in depth personas and future personas – experiences in the hospital
    - There were a couple of people in each group that latched on to personas immediately, and some others didn't really go with the personas. They wanted numbers. Personas didn't capture everyone's way of thinking. But they did immediately understand what they were talking about. All 15 groups presented with personas.
    - Used personas and future scenarios in planning and programming.
    - Personas and future scenarios were adopted by marketing and communication group
        - Used in newsletters for the project
        - Did not push personas on them
    - Initially created personas of patients and family members, now going to work on personas for staff members of hospital.
    - Other methods used
        - Traditional market data, ethnography, and participatory design
    - Personas tie groups together and communicate data obtained from other methods.
    - Almost always use personas with future scenarios

        - Use posters with future scenarios, key future innovations, and an understandable journey through the hospital.
        - Without scenarios and personas, it would just be a book of specs. They still use the book of specs, but now uses them with posters and personas
    - While involved in the project, some people latched on to personas for communication. The personas and future scenarios gave a language to use other than the architecture language.
    - Two of the main planners are former nurses
        - They were the two biggest fans of personas
        - Consultants to these architecture firms building hospitals
        - Now using personas with other companies they are consulting for. Getting others excited by using the personas in their sales pitch.
- Work with special populations?
    - Hasn't done much with disabilities but has worked with multicultural groups.
    - Migrant workers with language issues – posses challenges such as attitudes about non-english speaking patients. The hospital workers were not as open as the rest of the community.
    - The 15 groups checked each other with stereotypes. They policed each other.
- Hospital project
    - Did a lot of background research – surveys (100's) and participatory design workshops (5-7 with different community groups).
        - Developed 6-7 personas for patients
- Has to determine how much the client needs the personas – based on time and money available
    - Personas are always relevant, no matter what you are doing
- Teaches research to students at Ohio State.
    - Has introduced personas in classes. Leaves it up to the student teams to use them if they want to. Usually a couple of groups do.
    - Hard to determine what the effect is
- What is the future of personas?
    - More rigor
    - Right now a persona can range from sloppy work to something really substantial.
    - Need to be clear on how to use personas and why they should be used.
    - Need a better definition of personas
- If personas are made up or fabricated as a brainstorming tool or as an inspiration tool, that is ok. But, that persona should not be used later in the process as a valid representation of the user.
- Does not use just one method at her company. The overall philosophy
    - Give the tools and have people make them
    - That is most exciting thing but it takes a lot of work and preparation to get participants in a creative mood
    - There is some resistance to the method because of time
    - But, it is the only way to get future dreams and desires
    - Quicker in the long run but it feels longer to many people
    - A lot people think that not everyone is creative
- Do you remember any of your personas?

    - Remembers software company personas – but more so the actual people that were behind bringing the personas to life.
- It is important to show the client the real people behind the personas. It makes a bigger impact.
    - Software company would schedule an entire day to immerse the team in the details of the personas.
    - Links the raw data to the power point summary so people can view it.
    - At software company, people did go back to the raw data. At other companies, people don't, so they don't bother putting all the raw data into the ppt for them.

Interview Participant #7.
Notes from an email interview - these are verbatim responses from that communication

- Research Center
    - Interested in the use of personas not as an independent tool for promoting universal design, but as away to demystify customers with disabilities for designers and managers
    - This "epiphany" would then be supported by "harder" business data such as census and economic indicators

- We currently use our personas as ambassadors for center's research
    - To enable the wireless industry to better understand who their customers (and potential customers) are.
    - We also let our personas help disseminate research findings.
    - We recently completed a study of the impact of cell phone access on quality of life for people who don't have access to a cell phone because of cost. Since one of our personas fit this category, we let him describe the findings of this study as if he had been a participant.

- Like you, we see the need for research into the effectiveness of personas and other tools for engaging businesses with their customers with disabilities.
    - We began an exploration of this idea at a workshop on user-centered design in Scotland in August. I'm compiling a summary of this workshop and would be happy to share it when completed.

- Process I followed in developing our personas from the survey and focus group data we gathered.
    - I created a matrix of all the demographic categories represented in the 1200+ responses we received in our Survey of User Needs.
    - I then set about creating as few demographic profiles as possible to cover them all.
    - Over these demographic "skeletons", I created biographies reflective of the lives of our Consumer Advisors, many of whom we have met through our focus groups.
    - Having created a rough sketch of a persona, I then imagined a conversation with him/her to explore the believability of this individual, adding and correcting details as necessary.

- I suspect that this is a bit more data-driven approach than that used by others. I believe this makes our personas more persuasive to our audience, the wireless industry, because each persona emerges from both hard and soft data.

Interview Participant #8
Notes from telephone interview - these are not verbatim responses unless otherwise noted.

- Large software/hardware company
- Bachelors in ID, Masters in Human Factors
- People that don't support personas generally don't have any better suggestions
    - People that don't like personas don't because they are fictional and not backed up by data
-
- He doesn't have a lot of experience in creating personas
- Worked at previous company in the user centered design group for 1.5 years
- Moved to his company – been there 9 months
- Noticed cultural divide between the two companies
- Previous company
    - New to user centered design and in the process of trying to figure out how UCD works for them. They were also new to personas
    - People weren't pushed to use personas.
    - Some people attacked personas cooper style with no market data and little research
- His company
    - Have a set of personas (8-9) that they developed for software package and everyone pretty much had to use them
- As developed two groups of persons at previous company
    - Hired a comic book illustrator to draw the personas.
    - At previous company the comic book caricature was a mistake because the concept was so new to the people. It made it less believable. Should have used pictures instead
    - Example given 'Joe 6 pack.' Over the top – mullet, muscle shirt, beer, etc
    - Also had comic guy do scenarios in comic book style to describe what life was like and the current state of the individual – no new uses.
    - It was difficult because it wasn't forced at previous company
- It is important to get management support – just the user research group or user research manager is not enough
    - It is harder to push up than down – need upper management to push down
- Uses personas developed at his company several years ago for the longhorn project
    - Consistently uses them
    - Uses the same set for most of the projects done at current company
    - Some groups add their own personas or information to make it fit their market segment better
    - Uses personas for recruitment
        - Going to be running a study – tell the people that recruit that they need 40 Jane's and 10 John's for
        - The database of participants is categorized by persona qualities and have screens to filter out Jane's, John's, etc.
        - Will come back and say that they have a couple of "flavors" of John – which one do you want.

        - At the presentation of the data about the participants involved is reported in “40 Janes were surveyed and…”
    - Personas promote active discussion between people – engineers, etc. “this person wasn’t really a John… we should tell the recruiters that .
    - There is a bit of an issue of gender. The gender is picked based on the qualities, but there can be male Janes or female Johns. Often, the males don’t quite the fit the persona or vice versa.
- He talks about the personas like they are real people >> “She does this…”
- Was it a hard transition to go to persona speak? No, because he saw what personas can do. It was a natural progression
- Do you think that you might be missing out on information by just recruiting Janes?
    - Not if you did personas appropriately up front.
    - At current company their personas are grounded in good marketing research – example: including the % time using Excel, Internet, etc.
- Some people don’t like having marketing research when developing personas – they feel that they might be missing out on potential people or qualities
- Do you think that personas stifle creativity?
    - It depends – a designer with 20 years experience will already have the feel and sense of the markets
    - Sometimes designers push back a bit (engineers are worse) and designers think that they have exclusive views of everyone and can speak on their behalf.
- What is the potential
    - He developed www.wikipersona.org
        - A website that people can publish personas to and make changes
        - Can have discussions around personas – “this isn’t quite right”
        - Personas can evolve
        - Experts can come in a fix them
        - Can create new personas, update, change them to make more accurate
        - Public access
        - Has two personas on it right now – no pictures or anything.
    - Ethnographic database
        - Would require decree from upper management that all user research done would be entered into it
    - Personas at current company – all in HTML format
        - Has links to support information
        - Float curser over the information with statistics popping up
    - Would like to see more segmentation data – giving the background is important
- Before ethnographic research you will have to recruit. For the requirements you need to have requirements, screeners so you have to have segmentation data anyway.
- Do personas make the process more efficient?
    - Yes
    - Focus comes from it
    - Communication increases
- For undergraduates/student research project
    - Check who they interview for personas – is it their mom, neighbor, etc?

- Main points
    - Upper management must have the buy in – otherwise it is too easy for people to ignore them
    - The personas must be grounded in marketing data

Interview Participant #9.
Notes from telephone interview - these are not verbatim responses unless otherwise noted.

- Designer – software/hardware company
- Been at current company for 1.5 years
- Not a big fan of personas as a design tool but thinks that they are good for organizing information
- Has a Master's degree in Experience design
- Personas good for getting people to be user centered rather than product centered
- They organize product or marketing campaigns by personas.
- Personas create a neutral territory
- Some mistake personas for job role.
    - Big problem at current company
    - Example: a persona for an information architect – has many different potential personas that could be that role
- Writers like personas – it gives them an audience or someone to write to for help, manuals, etc.
- Personas connect product planning and usability research
    - Planners with customers
    - Customers are not users – they are often buying for someone else
    - User researchers talk to users
    - Often there are conflicting ideas between users and customers
    - Personas are a container for research insight on users
    - Can link customer insight to user personas
        - Field notes and video linked to these insights gives core research
    - User researchers will work with product planners to decide on features – link the decision to the personas
        - Can figure out if a real user needs or will connect with the feature
        - If product development or product planners decide to cut or add features they can figure out "who" it will affect. It is no longer intuition or a best guess to add or remove features.
- Personas are currently being used in 3 businesses at current company
    - Another group is developing their own web-based system
    - The persona database
        - Being defined by the audience in which the tools are being used
        - Not a lot of opportunity for overlap between businesses but there is opportunity within the businesses
            - Different products need the same user research and share the same persona in order to maintain continuity.
            - Overlap makes the design process more efficient and provides a consistent user experience
            - The overlap is created by this database. Overlap didn't exist before the database
        - Was it tough to 'sell' the database to people in the group?
            - Some people were into it, others were not. A lot of it depended on the state of the group's project at the time of introduction

        - The idea started because they were looking for consistency in the use experience across products. All of the products are integrated
        - Other issue facing them
            - Group that writes the help content liked the idea of people being able to find the help they needed based on who they were
                - Needed a way to organize content by personas – a customer could identify with a persona and then just follow that path
                - Didn't end up happening because too much work to re-tag all of the data right now.
- Potential
    - Idea of having real people chat with personas – personas could then offer help and participate
    - The ability of anticipating people's needs. The persona could then become a nice fact to introduce information to people.
    - Potential to build personal identity into hardware that matches the software
- Analyzing data
    - Database gives you the opportunity to generate data that you wouldn't expect
    - Hasn't explored all of the potential in the database analysis yet
    - Confident that new knowledge would be found
    - Toying with the idea of a graphical representation of the data
- How do you get data input?
    - Can't tell researchers how to do their research
    - Need the input to be flexible in order to take in anyone's information
    - Insights need to be in the same format, however – allow for 800 words of text for example, this could be a video or photo as well

Interview Participant #10.
Notes from telephone interview - these are not verbatim responses unless otherwise noted.

- Has being using personas since 2000
    - Came across the Cooper book and tried out personas because the boss wanted to try them for an online interactive broadcasting project
- Likes to use other methods in conjunction with personas
    - Mapping process – reality mapping and design mapping.
        - Figure out the existing process the user uses to reach a goal
        - Use same method to design new experiences
        - Maps tell the story and personas are the characters
- Has been trying to integrate personas throughout the process
- Interested in how to use the personas with the rapid development cycle
- Has done on the topic
    - Got professionals together to see how they are using personas and has presented major findings from them
- Things that make personas fail
    - If there isn't buy in
    - Don't involve the right people at the right time
    - If you don't know how you are going to use them
    - When they do fail people get busy and revert to their old methods
- Personas work well
    - When there is across the board interest in trying new methods
    - Good when you use them at the very beginning
    - Personas have to be perceived as time saving or beneficial in some way
- Issue – people get excited about personas but don't know how to make or use them
    - She advocates a method that combines data and assumptions into personas
- Ad hoc personas
    - Don Norman method
    - In absence of data, believes that assumption personas are better than nothing
    - Data is helpful but making the persona precise and specific – making it focused – is the most important
    - If you are making a persona with people that you work with – the persona will probably not be radically off without data because they know their customers
- Personas are good for getting people on the same page
    - The only assumptions that are bad are the ones that you don't talk about
- Was at online retailer for 3 years. Now a consultant that helps people make personas. Consults mostly for software and online retail
- Do you think that personas are more useful for 'experience' based products?
    - There aren't products that don't have experiences associated with it.
    - The persona helps you remember the experience better
    - Helps them remember that people experience with a start, middle, and end
- Developed the persona lifecycle idea with Pruitt

    - Modeled on the human lifecycle
        - Family planning
        - Conception
        - Birth
        - Adulthood
        - Retirement – what you do with it afterwards – how do you measure what you accomplished
            - Measure of success.
            - Not just improvement of product (before and after)
            - Look at process improvements
            - How much money was spent on the effort
            - Look at communication
- Measuring outcomes
    - Try to have a control group
    - Personas create a shared vocabulary
        - Look at documentation
            - Hypothesis – without personas will have vague documentation
            - With personas will have more precise and specific documentation
                - This will save time and money
    - The way she tries to measure
        - Think about it before you create them
            - What are the process issues
            - Identify the goals for using personas before doing the project
            - Problem > way things are today > way you would like them to be
            - At the end conduct a review
            - Hasn't done this yet
            - It is always hard to measure
- Dreyfuss had Joe and Josephine a long time ago
- Lectures a universtiy for technical communication classes
- The persona application to software is more obvious.
- Teaching personas isn't that easy – there isn't much on how to make them and fewer amounts of information on how to use them
- Hasn't talked to a lot of people in the last year for research
    - At least you can say that the state of the information is the same if I come up with similar findings
    - All research done a year or more ago
    - All research was done with a software focus – no industrial design information
- Worked with people with disabilities?
    - Disabilities is another frontier for personas – a lot of potential.
    - Didn't spend enough time on the issue.
    -

Interview Participant #11.
Notes from telephone interview - these are not verbatim responses unless otherwise noted.

- Consumer electronics company
- Been with current company for 2.5 – 3 years. Works on public safety radios and enterprise products (computers, blackberry).
    - Doesn't use personas often there
    - Does do a lot of participatory research with users
    - Uses personas for shortcuts once in a while
    - Does consulting for design research – finds that it is tough to sell research
- Most experience with personas at consultancy – there for 2 years.
- Learned about personas at consultancy, there in 2000
- Great way to create story for client and support decisions
- However, doesn't put a lot of trust in them be cause they are created by people so assumptions are made
- Great sales tool, easier to sell with personas, more tangible than PAR
- Method
    - Learned about market based on online statistics
    - Creates fictional people
- In the consulting environment you are paid to do the design, often you do the research for free.
- Personas are a good way to have research but not spend a lot of money. Participatory action research takes money
- Usability and cultural
    - Break down the life or day in to realms – tangible parts to design around.
- Likes generative participatory design. Creates new notions
- Remembers some personas. Calculator design for a teen boy.
- If you are limited on time or resources, or have cost constraints, personas are almost free to integrate.
- It depends who your audience is
- Would refer back to personas. Each persona had its own concepts
- Personas help process – helps you understand who you are designing for.
- Designers are involved in the research. Designers are paired with the research specialist.
- They developed the personas and design the concept at the same time.
- With personas – look at the environment the product or person is in
- The Generative Process
    - 50 individuals
    - Spend the day with them – break the day down
    - Dealing with real names and real people
    - Ask questions
        - Do action research – Velcro modeling, feature prioritization
        - Get new ideas that may not exist.
    - Can then develop concepts and evaluate them with the users (same 50 people that were observed)
- How much time does the generative process take?

    - Slowest part is getting access to the end users (recruiting)
    - Especially hard when you don't have existing customers for new products
    - Then sell research internally
    - 2 weeks of observation
    - 2 weeks of information sorting/concept design
    - Research presented with concepts
    - Evaluate with generative group and some additional people
- Sometimes you don't need research
    - If you have a good UI
    - With an understanding of the culture surrounding the product – a good designer can design aesthetics without research.

Interview Participant #12.
Notes from telephone interview - these are not verbatim responses.

- Employed at a large Software/Hardware company
- Personas are not of value except in certain situations
- First time used personas in an interface design firm
    - All personas were fabricated and not based on real data
    - Found it destructive
    - Challenge of time necessary to create personas vs. value
        - It isn't worth it
    - At interface design firm it took 3 months to create personas and find photos and brainstorm
    - There was a lot of details, embellishments to make them seem more human, and some was "on" but some was not
    - Developers didn't remember important details but remembered other stuff
        - Remembered "soccer mom" but filled in their own details about what they thought a soccer mom should be – which wasn't anything like what the persona was targeting
- At His company the personas are based on data
    - There is an assumption that developers can't deal with segmentation data, that the data has to be digested for them
- Personas are good where people are not in touch with their end users. This is not typical though.
- The company's hardware people do better with data – consumer detail trends, etc. – not pre-digested information such as personas
- If they use a persona, they only use real data – no extra details to prevent the soccer mom problem.
- A negative thing is that the server group has 26 different personas with one primary persona which is an IT administrator. Real life isn't a single role that the IT professional plays.
- Issue of Roles
    - A persona focuses on one use type and there is no consideration for the different roles that the persona might play.
    - People often cross over, between roles
    - It is good to be about to target roles instead
    - In hardware – a person can be a novice with one thing and not with another. (ex – networking vs. mp3) therefore it wouldn't be right for them to be characterized as a Novice for personas because he has expertise in other areas.
- When do personas work well?
    - Personas work well with stereotypical case of old school development team members that design for themselves. It is a good tool to show different users.
- Consumers are complicated. Information at the segmentation level is better. You can still see the complexities this way
- Market segmentation
    - Breakdown, profiles of users
    - example of aesthetics profiles
        - Three important segments important to consider for aesthetics

                - Practical – don't care what color it is
                - Sophisticated – like the high end stuff
                - Expressive – like whimsical
            - The sophisticated person might not be an early adopter or into high end. A practical user might love fashion clothing, etc.
            - You must be careful how you apply the information – personas are too simple
        - Other segmentation areas – the enthused, knowledgeable … user.
            - Like the ENPT personality test characterizations? – sort of.
            - Deal with bullet points that are actionable. Ex. Differential color pallets to appeal to the Expressive market.
            - Example –
                - Recent keyboard bundles marketed to the sophisticated user.
                    - This person is not price sensitive and they want nice stuff
                    - The segmentation information gives more data from engineer (high quality performance) and industrial design perspective (nice looking)
            - These designations have been around for about five years. They have just been refined more and broken down into sub categories
                - Example "serial upgrader that is part of the repeat user group"
- Observation >>> when speaking about segments, he refers to them as "Those users" rather than by the nickname of the segments or other means
- Segmentation
    - Their segmentation information is created by a collaboration between the marketing team (do big surveys and market research) and the user research team (do field studies, ethnographic studies).
    - Then combine all this info to identify segments
    - It is an easy process for the mouse and keyboard group – they know the segments and products well.
    - The bigger challenge is with new products that don't exist yet.
    - Segment categories do apply across products and product types
        - Sometimes the segment needs to be refined for certain types of products
    - They refer to the segments throughout the process
        - There are several key milestones
            - 1st – the portfolio gap presentation by the marketing team – identifying opportunity
            - Then define target consumer – early front end development – the "what" or needs
            - Then define the "how" – aesthetics, form – look to customer preferences based on segments
            - During feature trade offs – look at the target audience to make the decisions
    - User research stops when the product has been defined but the marketing people are involved throughout the process
- Has been at His company for 3 years
    - Been in user research a while.

        - Must communicate research – what are the needs and what they are trying to do. This requires particular information about the users.
    - For web development, has used scenarios
        - Scenarios tell what the situation is but not who the person really is or why they are there.
        - Scenarios define the path
- Do personas limit creativity?
    - You can always do blue sky work. It is easy to brainstorm
    - It is good to work from well defined user needs and good to measure against them
    - From blue sky brainstorming you can ask whether the idea can be useful – user research can answer this
    - They have brainstorming sessions
        - What are the needs: stated, latent, anticipated
- The engineering and marketing people do go out in the field and do or observe the research. It is good for them
    - If the engineer only sees one field visit and it isn't a "typical user" then they might only develop for that one person that they saw.
- In user research each product has a team or user researchers, industrial designers, marketing people, etc.
- Do you share research with other groups?
    - All user research reports go to one manager so he has all of the information
- User researcher vs. usability
    - User research has been the culture in hardware for a while.
    - The software groups have been more focused on usability
    - User researchers identify what product needs to be created in order to meet a need
    - Usability people look at how well it needs to be built
        - Usability engineers test code with users and can tell you if you built it the right way. But they can't tell you if it is the right product.
    - User researchers find latent needs – more beginning to end development
    - Usability people come in only later on in the process
- Changes downstream in the process are really expensive
    - Reason hardware has been doing user research for a long time
    - For software, the changes are not as big of a problem down the line – you can always release a 2.0 version
    - Development groups are getting into user research more now because it is harder to make changes
- Has been doing user research for 22 years
- Personas are a fad. The cooper book came out and now everyone is using them.
- Engineers and developers want data. Treat them like adults, they can handle the messy details
- Having a core set of understanding (personas) is good, but "digested"
    - Users are messy
    - There are different ways of cutting it down
        - Identify what is most important – is it design or performance

- Look at the segment designations and then decide how to label them – sophisticated, expressive, novice, early adopter, etc.

Interview Participant #13.
Notes from telephone interview - these are not verbatim responses.

- Design researcher
- Not a huge fan of personas
- Has used them to explain key points in research
- Online Bank Project
    - Used personas to explain types of financial advice that customers might need
    - Personas called – dear abbey, Sherlock Holms, home depots
    - Characterized one point that they were trying to convey to their client
- Feels that personas over-simplify things
- Saw personas at the About, What, and For Conference
- A lot of details in personas aren't relevant
    - Attitudes
    - Purchasing habits – ex. Bob drives a Cadillac in a persona for a mobile telephone project
    - Would rather use real people evidence from interviews rather than a composite of a lot of data points
- Bank project
    - Did 20 interviews and observations and noticed trends. These were grouped into 3 types of people
- 1st time using personas was in 1998 at Consultancy. Reference each person and then compare people – these people are similar in these ways…
- Believes that Corporations use personas more than consultants because of the marketing influence. Marketing is used to it and expects it. Consultants need to convince clients and real people evidence works better.
- Current company– a food service packaging company (consultant?)
- What impact do personas have?
    - On the Bank project (a website), the services were clustered around a persona. The plan was to ask the visitor questions to determine what persona they were like and then target to that persona.
    - Personas create empathy – knowing that you are designing for a real person. This is good especially for marketing people.
- What is your strategy?
    - For products, creates a matrix of personas vs. features. Then looks for the overlaps to find out what the product should be.
- Personas are a good opportunity for products that specialize. It used to be that you were trying to design for as many people as possible. Not the case as much anymore.
- Have you worked with personas and any special populations?
    - Did a project for Mobile phone company and police officers.
        - They have SITUATIONAL DISABILITIES – sometimes can't hear, see, etc.
    - Hasn't worked with PWD specifically.
    - Feels that it could be difficult to generalize disability and ability. A better approach might be to show real people and look at a range of ability – disability rather than cluster them.
- How often do you refer to them?

    - The role of a persona is a means to communicate the research. It is a drawing or diagram of the findings.
    - She does the up front research and passes it along. She doesn't monitor what happens afterwards.
    - If the persona is iconic enough, it stays in a designer's head.
- A persona is a means of conveying information. A video clip, photo, quote – all of real people, can really do this well.
- Has seen personas confuse designers when they are a composite of people – especially if it is full of irrelevant information. Example – the persona talking about how Bob liked Cadillac's. The designers were confused about whether that meant that the phone should look like a car..
- Personas are good to help focus a design and makes design trade-off decisions a lot easier.
- Bank project
    - Research and analysis was about 3weeks to a month. There was a clear grouping of people once the interviewing began.
    - The hardest part was deciding what to name people so that they were easy to understand and remember.
    - Where designers involved? Not as much as she would have liked. They didn't do the interviews, but they did review the tapes and were debriefed. It was easy for them to identify the groups as well
- Do you remember other personas?
    - A teenagers and media project
    - A snappy name is good – they were titled Sharers, Creators, and Changers. They were named after their situations!
    - Regular names are not memorable. These are ' Marketing Type' personas.
- Do they make designs better?
    - Successes are based on the fact of research being successful and how it is conveyed, not personas.
    - It is hard to say how much impact the personas have had. She is often there to remind designers and engineers about the research.
    - The snappy name makes designers remember the research. – it is stuck in their head whether they like it or not.
    - There are two types of designers – those who want research and those who don't.

Interview Participant #14.
Notes from telephone interview - these are not verbatim responses.

- Product designer for large equipment manufacturer
- Works mostly with end users in design
- Rarely assembles information from a lot of interviews into a fictional person
- They have a range of machines and will invite end users to operate their equipment, as well as their competitors to get feedback
- Works on big machines at His company
- At most the production of the machines is in the 10,000's and some of the largest machines might have a run of 25-50 produced per year
- Maximum production of any one product is around 30,000 per year for some of their smaller machines
- User feedback is critical
    - Their users are experienced, especially on the larger machines
- Will go out onto the jobsite or proving grounds (Company facility) for people to try out products
    - Initially does observations and initial interviews on the jobsite.
    - Conducts interviews with full scale and scaled down models
    - Video tapes interviews
    - Sometimes uses specific questionnaires developed by marketing
- His company has 9 industrial designers and also uses outside design firms when the load is too much
- Company is arranged into business units
    - Each unit has their own marketing group to do research and the designer usually does some additional research on his own (interviews, etc)
- Been at His company 5 years, before that designed exercise equipment for a year
- Licensed merchandise (toys, boots, clothes) is overseen by marketing. They don't design it in the ID group. Will get involved eventually
- How do you make better design decisions?
    - Document user within the context – where do hands and feet go, etc
    - Don't ask the user what they want – gives a range of options instead
        - Otherwise you would get 20 different answers from 20 different people
        - The range is determined by what is possible
        - Presents concepts with a statement – not a picture.
            - Doesn't want to lead the user
        - Does guide them however – not what color would you like but 'out of a range of grays and blues, what do you like most'
        - Makes educated guesses about technological abilities and then presents or proposes ideas
- Doesn't do blue sky design type things for something that is coming out in 3-5 years
- Some designs are 30 years out.
    - They get their user data for this type of project from symposiums, designers, technology, intuition
    - Doesn't look at trends much because they change each year
- Does follow trends in automobiles – forms, etc

- ‘Experienced Users’ on staff demonstrate the equipment to people and train new buyers
    - Are able to talk with people in industry and generally know what people out there want
- Would like more time for design and research. It is hard to discern the truth from marketing, etc.
- Would like technology that facilitates observations, etc. better (laptops that you can use in harsh conditions, the rain, etc)
- Typically doing research in rugged environments – only armed with a digital camera and a clipboard
- Research/design is 18-24 months.
    - Works simultaneously with engineers
    - There are up-front givens. Things that have been perfected over the years such as blade design, etc.
    - ID team stays involved long enough to make sure that the design features aren’t compromised
- Design is design – no matter what you are making, It is an effort to blend form and function.

Interview Participant #15.
Notes from telephone interview - these are not verbatim responses.

- Employed at large software/hardware company
- Believes that at best, a persona can serve as an inspiration for people that can't get inspiration elsewhere
- Personas are non-scientific
- Has been on projects where thy were used poorly
- Problems with personas
    - They are overly tailored
        - Example – an entire market segment is represented by one person. This hides the variance of characteristics within the segment
        - It is not a good representation of customers
        - Each attribute has a probability of occurring in the segment. When personas have multiple attributes the probabilities of each of these attributes are multiplied – giving a smaller and smaller slice of the actual segment represented by the persona. >> probability of attribute 1 = 0.x, probability of attribute 2 = 0.y, so probability of persona with attributes 1 and 2 is 0.x*0.y
        - Therefore a highly specific persona represents no one
    - There is an operational problem
        - Usability work establishes who they are designing for and recruit people that match that persona
        - It is generally not the case in industry that the customer actually matches the persona. So they are not testing with all of their potential customers. It is a disservice
        - This can result in the developer incurring risk, costs, etc. because of the other people that aren't included in the recruitment. Issues come up later that they didn't plan for because they didn't include these people
    - Unjustified dimensional assumptions
        - There are one or two dimensions developed – example early adopter, etc.
        - There is an assumption that if it works at one point on the scale that it will work for all people above that pt on the scale. That isn't the case. Example – something developed for the novice probably isn't good for someone that is tech savvy
    - Doesn't like how they work with a team
        - This is the biggest problem
        - When talking with development team, there is a lot of information from a lot of sources.
        - You are not in a void with persona – people get information from customer contact, themselves, family, etc.
        - With personas they get two options
            - Believe the persona and exclude all of this extra information from the other sources

                - Or ignore the persona and believe the other information that tends to be richer and be in line with their thinking. This is more common
            - Personas don't offer a way for people to think of data holistically – they should have a mental model
        - Personas do not align with business opportunities well
            - Will go out and look at what people are doing now
            - Difficult on a larger scale – you want to help people move from one behavioral group to another.
            - Focusing on people within one specific category (personas) doesn't help them move
            - Example – if ipod would have looked at who was currently using mp3s – their idea never would have worked.
        - Personas are not empirically justifiable
            - There is no established procedure for creating them
            - There is no way to see if they are correct
            - The door is open to questioning – and this causes expansion in the definition of the persona – can easily say "how about these other five people…"
            - There is no way to replicate persona creation
                - If the same data was given to the same team, they would not produce the same persona
            - There is no method of verification
- Personas would be ok for inspirational value
- At His company it is a usability community
    - Most people there use personas and believe them
    - A number of people aren't convinced of personas though but they are reluctant to speak out against them
- In hardware division
- His approach
    - Get an understanding of the entire target market – not a slice like a persona gives
    - Identify what factors apply to all possible segments of the market
    - Look at dimensions – find an intersections of the different dimensions (form a cube in space on an x,y,z axis)
        - Example – for mp3 players look at if they have a computer, etc.
    - It is important not to pick a specific example but rather understand the whole slice
    - Uses traditional behavioral research methods
        - Sample randomly
            - A good sample will give you your persona points as well
            - Does lab studies, interviews, observations, field work, focus groups, surveys
        - Takes all this information and can see where things come together. All indicators will come to the same place. If they don't then your hypothesis is wrong and the researcher isn't understanding the situation properly
    - Involves as many of the team members as possible.
        - Involvement varies

                - Some just review the results from the presentations and reports
                - Observational – watch lab studies, videos
                - Some participate in the research
        - Research should be active throughout the entire process
        - They do a lot of early research before committing to the expense of developing
            - Early on research focuses on user needs and behaviors
            - Later on the focus switches to usability
        - Presenting information
            - Specific reports
            - There are review meetings periodically – the scope ranges
                - Small bits – specific things
                - Everything we know presentations to the entire division. This is the high level understanding stuff
                - Single report or document to summarize the knowledge. This is in the Q&A format
                    - They often don't have an answer to the question so they leave it blank… but it tells what they need to know
        - In research there are always new ideas coming in and brainstorming sessions.
            - They have to then be evaluated
        - They conduct broader research that is not specific to a particular product but looks at user needs in general
        - Do field and exploratory studies that helps them stay in touch with trends and often they lead to opportunities
        - They reuse research of projects. The information collected in generalized so that it can be applied to other projects
- Has been at His company for 5 years and is a User Research Lead.

Maslow's Hierarchy of Needs	PERSONA'S EXPERIENCE					DESIGN IMPLICATIONS				
	 Bonnie	 Suzie	 Delia	 Dave	 Marian	 Bonnie	 Suzie	 Delia	 Dave	 Marian
Self-actualization Becoming what one is.	Wanted to stay at work to maintain self.	Her cat's needs forced her to participate in life.	English was not very strong, but did speak Portuguese. Was she going to die?	I only knew about older folks getting cancer, then there I am coming out of surgery... I wanted to stay a part of my family unit	Found through a friend a physiologist to help her deal with her situation. And where she was in life.	Tele-commuting w/ office?	Healthcare Tomagachi? Stay connected to people who depend on her to tell them what to do.	Provide info in native tongue. Provide case studies from volunteer patients' diaries.	Case studies of patients who volunteer their personal diaries?	Have access to counseling resources. Independent recommendations available?
Esteem, competency, mastery of task.	No waiting - was able to move quickly to treatment after biopsy	Mother did many tasks for her. Boredom was high. Only could tolerate 20 mins @ a time w guests @ hospital.	Had friends visit and they told her how beautiful she was.	My dad's an engineer. He made a spreadsheet to keep all the insurance information organized and updated.	Was asked to leave hospital w/o her fulling understanding how to maintain her tracheotomy. She was not ready to leave.	Expedite gaps in treatment(s) if possible	More entertainment Send e-mails when she has the energy	Provide shopping access for supplies / clothing.	Provide data and information in a way so that patient can access and become the masters of their situation.	Access to "How To" information dealing with treatments or device maintenance.
Love, belongingness to group.	Stayed active socially, w/family, and professionally throughout experience	A young @ home care nurse 'freaked out and treated her like a 'pariah.' She did not engage Suzie as a human & instead ran away. It hurt her esteem.	Husband and friends helped and supported that she get a second opinion on radiation trtmt. Most of family in Portugal Her friends from the US were there for her throughout.	My mom would come with me to admissions and stay with me, then my dad would come by at dinner time. I'd perk up when visits would happen.	All of the friendships she had developed over the years really came to support her. Two friends traveled by plane to see her.	E-mail, IM'ing Develop teams of survivors for those w/o family support structure.	Video recorded to log service quality	Improve connection from hospital bed to world.	Access to a broader network can help with the healing and over all well being of the patient. Hospital sponsored chat room?	Friends at distance can visit, see the patient, and that hey received the flowers sent by using basic teleconference or digital pictures.
Safety, constancy, stability in a chaotic world.	Knew her doctors were having team meetings	Did not know what happened after surgery & was surprised. Billing confusing. Needed an itemized list for insurance policy.	Poor insurance. Doubted doctor in small hospital where she had her surgery.	It got to the point where my parents printed out a packet with my info for residents I didn't know that certain things were going to happen until someone walked in	Kept white board list of names of nurses on duty. Kept copious notes books of what each Dr. said.	More hospitals should use "team"idea. Make meeting notes available. Reduce redundant info in report(s).	Info on what insurance will cover Billing is organized in diff ways. Improve response from doctor	Provide options that insurance will cover and show alternatives. Access to other treatments.	Pre programed form with basic answers that can be transferred when checking in. A daily planner for scheduled activities	Images, titles, and names of care givers available constantly & when they walk in room send cue to patient. Helps develop relationships.
Basic physiological needs, water, food, sleep, sex, health	Husband helped a lot. She was able to rest and recover on the weekends after her chemo on Fridays. He was her support.	Mother told her. "You're staying for more than one day." Not motivated to eat, but had cat to feed. Ran out of meds ad doctor did not return calls.	Dr. recommended both Chemo & radiation. She selected only Chemo based on other Dr. input.	My surgeon wanted to amputate with in the week. Were there other options? We ended up going with another surgeon.	Became unconscious due to breathing problems. Daughter did not know if a stage 4 cancer patient should be revived. Dr. told her that the patient said do every thing you can do	Email "to do lists" to friends or family.	Reminder of new schedule Warns of low meds.	Make treatment information more available to patients.	Access to information on alternative treatments.	Personal notes or other recordings of patient's wishes for primary family member's reference.

Cophar Methodology Persona-Hierarchy Matrix example.

Suzie, Jenkintown, PA

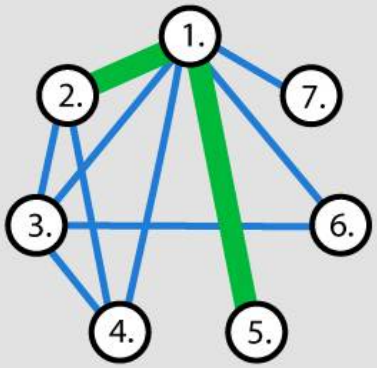
- Age: 54 | Occupation: Healthcare Admin.
- Marital Status: Married
- Family: 2 children - Son = 33
  - Daughter = 30

  Husband = 59
- Household Income: $76 - $100k
- Comfort Level w/Technology:

1 2 3 4 5 6 7

- Breast Cancer Survivor - (Lumpectomy)
- Stayed socially active and continued to work during chemo and radiation
- Her doctors used a team format at the hospital to ensure everyone on the main care staff = "In the Loop"
  She did not attend these meetings - trusted her care staff
- Doesn't want too much info from anyone or to worry too much. She wants to get on with her life.

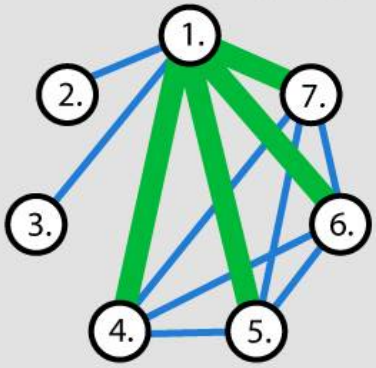
Support Network (Bonnie)



1. Bonnie (Self)
2. Husband
3. Daughter (30)
4. Son (33)
5. Sister's Ex-Husband's New Wife [Similar Cancer Experience (SCE)]
6. Granddaughter (7)
7. Similar Treatment Experience (People in waiting room - Chemo) w/Same/Similar Illness

Primary Interaction
Secondary Interaction

Treatment Team Network (Bonnie)



1. Bonnie (Self)
2. Family Doctor
3. HMO
4. Oncologist *
5. Radiologist *
6. Chemotherapy Dept. *
7. Surgeon *

* = Treatment Team

Primary Interaction
Secondary Interaction

Cophar Methodology resulting persona example

APPENDIX C: PERSONA CREATION RESEARCH DOCUMENTS

Georgia Institute of Technology – Industrial Design Department
Project Title: Personas – Action Research – Development Exercise
Investigators: Wayne C. Chung, Karen L. Williams
Consent title: Main 12/05/05v2

Research Consent Form
You are being asked to be a volunteer in a research study.

Purpose:
The purpose of this study is:

The purpose of this research is to gain an understanding of how individuals go about creating personas what information they choose to include in user descriptions, and how well information is communicated between the collector and provider. Personas, or fictional user profiles based on data collected through research are currently used in many fields, including marketing, interface design, and product design. This exercise will ask you to conduct an unstructured interview with an assigned partner and then write a persona based on the information provided. Your partner will be doing the same with the information that they receive while talking with you. You will then be asked to comment on the persona that your partner has created. Approximately 10 faculty and students will be included in this study from Georgia Institute of Technology. It will require approximately 3 hours of your time.

Procedures:
If you decide to be in this study, your part will involve:

An un-structured interview lasting no longer than one hour with a partner. Questions will cover an assigned general interest topic such as living spaces. You may be audio-taped during this interview so that the researcher can compare the information that was discussed in the interview to that which was included in the written persona.

Writing a persona based on the collected information which will then be submitted to the researcher.

Reviewing and commenting on the persona that your partner created based on your information.

Risks/Discomforts
The following risks/discomforts may occur as a result of your participation in this study:

The risks involved are no greater than those involved in daily activities such as discussing your lifestyle with another individual.

Benefits
The following benefits to you are possible as a result of being in this study:

You are not likely to benefit in any way from joining this study. But we hope that information produced from this study will help the design community gain a better understanding of the persona tool and its potential in future design projects.

Compensation to You

You will receive a $10 gift card for a local store as compensation for participating in this study.

Confidentiality
The following procedures will be followed to keep your personal information confidential in this study:

The data that is collected about you will be kept private to the extent allowed by law. To protect your privacy, your records will be kept under a code number rather than by name. Your records will be kept in locked files and only study staff will be allowed to look at them. Your name will not appear when results of this study are presented or published. If at any time you wish for certain identifying information to be withheld from the research results, please notify the researcher and you will be accommodated.

Audio tapes will be used during the interview with your partner in order to record accurate statements for later research analysis. Only authorized researchers on this study will have access to these tapes. The tapes will be kept in a secure and locked location. Once this study has ended and all necessary information has been collected, the tapes will be erased.

In the case that you are providing information via email, you should be aware, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

To make sure that this research is being carried out in the proper way, the Georgia Institute of Technology IRB may review study records. The Office of Human Research Protections may also look at study records.

Costs to You
There will be no cost to you for participating in this study

Subject Rights
Your participation in this study is voluntary. You do not have to be in this study if you don't want to be.

You have the right to change your mind and leave the study at any time without giving any reason, and without penalty.

Any new information that may make you change your mind about being in this study will be given to you.

You will be given a copy of this consent form to keep.

You do not waive any of your legal rights by signing this consent form.

Questions about the Study or Your Rights as a Research Subject
If you have any questions about the study, you may contact Wayne Chung at telephone (404) 385-4982.

If you have any questions about your rights as a research subject, you may contact Ms. Melanie Clark, Georgia Institute of Technology at (404) 894-6942.

If you sign below, it means that you have read (or have had read to you) the information given in this consent form, and you would like to be a volunteer in this study.

Persona Development Exercise Instructions

Thank you for taking the time to participate in this exercise. The goal of this research is to gain an understanding of how people create personas. I have not provided a strict framework for your interview or persona creation because I am as interested in how you attack this problem as I am in your solution. I hope that you enjoy getting to know your partner and developing these personas.

For this research exercise, please do the following:

1. Sign the consent form included in the packet.

2. Meet with your partner and discuss the following topic. They will be seeking the same information from you. Please tape record your interaction.

   Topic: **Living Environments,** Your goal is to get an understanding their **current situation, needs, desires, and goals.**

3. Return the consent forms and tape recorder to me personally or simply leave it on my desk in the graduate studio after your meeting.

4. Develop a persona based on this information. Include whatever you would like, in whatever format you feel comfortable with. A page should be sufficient.

5. Email the persona to me. I would appreciate it if you could do this by *Sunday*. Earlier is great too.

6. Once I have received both personas (from you and your partner), I will send the persona based on you to your email address.

7. Please look over it, verify it, and comment on it. This element of the exercise is just as important as the persona development.

8. Email your comments to me *before Thanksgiving*.

Thank you

APPENDIX D: PERSONA UTILIZATION RESEARCH DOCUMENTS

Georgia Institute of Technology – Industrial Design Department
Project Title: Personas – Industrial Design Development and Use
Investigators: Wayne C. Chung, Karen L. Williams
Consent title: Main 02/20/06v1 Student

Research Consent Form
You are being asked to be a volunteer in a research study.

Purpose:
The purpose of this study is:

The goal of this exercise is to investigate the use personas in the educational setting and how the tool impacts the student design process. Personas, or fictional user profiles based on data collected through research are currently used in many fields, including marketing, interface design, and product design. This study will coincide with the ShowerSpa project in the ID3012 Spring 2006 course. Information will be collected in several ways. You will be asked to discuss your experiences developing and using personas on the project and with your studio groups in an interview at the end of the project. You will also be asked to complete a 10-minute exercise at the beginning of your project and upon its completion. Additionally, researchers will observe your class and look at your project deliverables throughout the project duration. Approximately 50 faculty and students will be included in this study from Georgia Institute of Technology's Industrial Design department. It will require approximately 40 minutes of your time outside of class. All other information will be collected during your studio time.

Procedures:
If you decide to be in this study, your part will involve:

Being observed during class presentations, critiques, and general studio work-time. Observations may be recorded in the form of pictures, audio recordings, and/or hand written notes by the researcher.

Completing a pre/post test lasting no more than 10 minutes before and after the persona project. This will consist of one question that aims to measure how much you learn from the beginning to the end of the project about a single design issue of interest.

A semi-structured interview with a researcher and your group and/or individually lasting no more than 20 minutes. Questions will cover your process used to develop personas, how you used them throughout the project, and your opinions on the tool. You may be audio-taped during this interview so that the researcher can accurately record this information.
.

Risks/Discomforts
The following risks/discomforts may occur as a result of your participation in this study:

The risks involved are no greater than those involved in daily activities such as discussing your lifestyle with another individual. Your participation in this study will have no impact on your ID3012 grade.

Benefits
The following benefits to you are possible as a result of being in this study:

You are not likely to benefit in any way from joining this study. But we hope that information produced from this study will help the design community gain a better understanding of the persona tool and its potential in future design projects.

Compensation to You
You will receive no compensation for participating in this study.

Confidentiality
The following procedures will be followed to keep your personal information confidential in this study:

The data that is collected about you will be kept private to the extent allowed by law. To protect your privacy, your name will only be used for tracking purposes during this research exercise. Records will be kept under a code number rather than by name. Your records will be kept in locked files and only study staff will be allowed to look at them. Your name will not appear when results of this study are presented or published. If at any time you wish for certain identifying information to be withheld from the research results, please notify the researcher and you will be accommodated.

Audio tapes may be used during the interview with the researcher in order to record accurate statements for later research analysis. Only authorized researchers on this study will have access to these tapes. The tapes will be kept in a secure and locked location. Once this study has ended and all necessary information has been collected, the tapes will be erased.

Photographs of you or your work may be taken for later research analysis. Your name will not appear in conjunction with these photographs if they are used after the completion of this research for data reporting. If at any time you do not wish to have your photograph taken or used, please notify the researcher and your will be accommodated.

Your project deliverables including presentations, documentation, and designs may be analyzed by the researcher for persona content. Your name will be eliminated from these documents and the researcher will have no impact on the grading by the instructor.

In the case that you are providing information via email, you should be aware, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

To make sure that this research is being carried out in the proper way, the Georgia Institute of Technology IRB may review study records. The Office of Human Research Protections may also look at study records.

Costs to You
There will be no cost to you for participating in this study

Subject Rights

Your participation in this study is voluntary. You do not have to be in this study if you don't want to be. Your participation will not impact your studio grade.

You have the right to change your mind and leave the study at any time without giving any reason, and without penalty.

Any new information that may make you change your mind about being in this study will be given to you.

You will be given a copy of this consent form to keep.

You do not waive any of your legal rights by signing this consent form.

Questions about the Study or Your Rights as a Research Subject

If you have any questions about the study, you may contact Wayne Chung at telephone (404) 385-4982.

If you have any questions about your rights as a research subject, you may contact Ms. Melanie Clark, Georgia Institute of Technology at (404) 894-6942.

If you sign below, it means that you have read (or have had read to you) the information given in this consent form, and you would like to be a volunteer in this study.

Georgia Institute of Technology – Industrial Design Department
Project Title: Personas – Industrial Design Development and Use
Investigators: Wayne C. Chung, Karen L. Williams
Consent title: Main 02/20/06v1 Instructor

Research Consent Form
You are being asked to be a volunteer in a research study.

Purpose:
The purpose of this study is:

The goal of this exercise is to investigate the use personas in the educational setting and how the tool impacts the student design process. Personas, or fictional user profiles based on data collected through research are currently used in many fields, including marketing, interface design, and product design. This study will coincide with the ShowerSpa project in the ID3012 Spring 2006 course. Information will be collected in several ways. You will be asked to discuss your experience using personas as a teaching tool and your observations about student performance as it is related to personas. This information will be collected through informal discussions during the project and in a semi-structured interview at the end of the project. Three faculty members will be included in this study from Georgia Institute of Technology's Industrial Design department. It will require approximately 2 hours of your time outside of class. All other information will be collected during your studio time.

Procedures:
If you decide to be in this study, your part will involve:

Being observed during class presentations, critiques, and general studio work-time. Observations may be recorded in the form of pictures, audio recordings, and/or hand written notes by the researcher.

Discussing your observations about your student's performance as it is related to persona use with the researcher. This may be done informally during the project and in a semi-structured interview with a researcher and the other instructors and/or individually lasting no more than 60 minutes. Questions will cover your student's process used to develop personas, how you saw them used throughout the project, and your opinions on the tool. You may be audio-taped during this interview so that the researcher can accurately record this information.

Providing researchers with examples of student work throughout the project.
.

Risks/Discomforts
The following risks/discomforts may occur as a result of your participation in this study:

The risks involved are no greater than those involved in daily activities such as discussing your lifestyle with another individual.

Benefits
The following benefits to you are possible as a result of being in this study:

You are not likely to benefit in any way from joining this study. But we hope that information produced from this study will help the design community gain a better understanding of the persona tool and its potential in future design projects.

Compensation to You
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Confidentiality
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The data that is collected about you will be kept private to the extent allowed by law. To protect your privacy, your name will only be used for tracking purposes during this research exercise. Records will be kept under a code number rather than by name. Your records will be kept in locked files and only study staff will be allowed to look at them. Your name will not appear when results of this study are presented or published. If at any time you wish for certain identifying information to be withheld from the research results, please notify the researcher and you will be accommodated.

Audio tapes may be used during the interview with the researcher in order to record accurate statements for later research analysis. Only authorized researchers on this study will have access to these tapes. The tapes will be kept in a secure and locked location. Once this study has ended and all necessary information has been collected, the tapes will be erased.

Photographs of you or your work may be taken for later research analysis. Your name will not appear in conjunction with these photographs if they are used after the completion of this research for data reporting. If at any time you do not wish to have your photograph taken or used, please notify the researcher and your will be accommodated.

Student project deliverables including presentations, documentation, and designs may be analyzed by the researcher for persona content. Your name will be eliminated from these documents.

In the case that you are providing information via email, you should be aware, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

To make sure that this research is being carried out in the proper way, the Georgia Institute of Technology IRB may review study records. The Office of Human Research Protections may also look at study records.

Costs to You
There will be no cost to you for participating in this study

Subject Rights
Your participation in this study is voluntary. You do not have to be in this study if you don't want to be.

You have the right to change your mind and leave the study at any time without giving any reason, and without penalty.

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If you have any questions about your rights as a research subject, you may contact Ms. Melanie Clark, Georgia Institute of Technology at (404) 894-6942.

If you sign below, it means that you have read (or have had read to you) the information given in this consent form, and you would like to be a volunteer in this study.

Persona Background Presentation Given to Students

Personas
A tool for understanding others in order to make better design decisions

Karen Williams
February 15, 2006
Persona Background

What are Personas?
- User profiles
  - Fictional
  - Representative of unique group of individuals
- Based on research
- Research to identify:
  - Behaviors
  - Attitudes
  - Goals & Motivations
- Personas are ***not an average*** of user characteristics, but a stand-in for a unique group

Example Persona

History of Personas
- User Research
  - Ethnographic research
  - Market research
- *Personas* introduced by Alan Cooper
  - *Inmates are Running the Asylum* – 1999
  - Interaction design firm
- Process built on by others

Benefits of Personas
- **Relate** to user as an individual
- **Common** vocabulary
- **Filter** out your own personal preferences
- **Match** product focus to user needs and goals
- **Guide** tactical design decisions
- **Facilitate** design trade-off decisions

Benefit – Design Space
- Identify boundaries for a design
- Create additional 'design space'

Persona Development Steps

Development: Gather Data
- Quantitative Research

    - Demographics
    - Market segmentation
    - Surveys
- Ethnographic and Qualitative Research
    - Stakeholders
    - Personal interviews
    - Direct observations

Development: Analyze Data
- Map subjects across variables
- Identify behavioral patterns

Development: Analyze Data
- Identify persona *types*
    - **Primary** (Focal)
        - Must be satisfied
        - Main user of focus
        - Neediest
    - **Secondary**
        - Satisfy them if possible
        - Use product also
    - Unimportant
        - Low priority users
        - Infrequent, unauthorized
        - Misuse product
    - Affected
        - Others that are affected by the product use
    - **Exclusionary** (Anti-user)
        - Who you are not designing for

Development: Creation
- Identity
- Persona type
- Relationships
- Needs/Goals/Attitudes
- Knowledge/Proficiency
- Context of use
- Tasks/Use Characteristics
- Expectations

Persona example: cophar method

Tips for creating personas
- Gather data from **real people**
- Personas should be **specific to your project**
- Provide **details** and maintain authenticity
- Keep the persona **focused**
- Use **quotes** to make the persona seem real

Personas in the design process
- Brainstorming

- Scenario/Storyboard
  - Identify tasks
  - Personas are the characters in your story
- Feature trade-offs

Personas in the design process
- **Communication**
  - Common Language
    - Within team
    - Stakeholders
- **Evaluation**
  - Back up design decisions
  - Usability

Resources
- Persona Creation and Usage Toolkit – George Olsen
  www.interactionbydesign.com/ presentations/olsen_**persona_toolkit**.pdf
- Alan Cooper
  www.cooper.com
- CATEA
  www.catea.org
- **Karen Williams**
  karen.williams@gatech.edu

Thank you.

Post-Project Persona Utilization Interview Questions for Student Groups

Development:

- In general, did your group consider user needs or preferences? How and to what extent?
- How often did you refer to your personas for this project?
- At which points of the design process did you refer to your personas?
- What details do you remember about the personas you created for this project?
- Did your group create personas as a group or individually?
- What requirements did your professor give for the persona creation, if any?

Design Use and Communication:

- How often did you refer to your personas for this project?
- At which points of the design process did you refer to your personas?
- What details do you remember about the personas you created for this project?
- Were the personas helpful for this project? Why or why not?
- What requirements did your professor give for the persona creation, if any?
- Did you use personas for:
    - feature trade-offs
    - group brainstorming
    - individual brainstorming
    - design criteria identification or refinement
    - concept refinement
    - scale model creation
    - aesthetic choices
    - presentations
    - communication with group members
    - communication with instructors
    - communication with company representatives

Experience:

- Had you used personas prior to this project?
- Had you created personas prior to this project?
- If so, how was this process different?
- Do you feel that the creation of personas was worth the time invested?
- Would you use personas again? If so, in what instances?

APPENDIX E: PERSONA UTILIZATOIN RAW DATA

	Instructor C							
	Pre Test			Post Test			Differences	
	# Resp	# Stu	Resp/Stu	# Resp	# Stu	Resp/Stu	Response	Student
Access - Entry/Exit	26	9	2.89	22	11	2.00	-4	2
Blind/Low Vision	25	9	2.78	8	7	1.14	-17	-2
Dexterity - Control Manipulation	19	8	2.38	12	7	1.71	-7	-1
Balance/Stability	12	6	2.00	11	8	1.38	-1	2
Slipping/Falling	14	9	1.56	10	8	1.25	-4	-1
Bending / Reach - Controls and Shower	7	6	1.17	13	8	1.63	6	2
Seating/Transfer	16	7	2.29	12	9	1.33	-4	2
Cognitive - Understanding Controls	9	5	1.80	13	8	1.63	4	3
Space/Mobility	10	6	1.67	3	2	1.50	-7	-4
Control Water Direction	2	2	1	4	1	4.00	2	-1
Reach and Use - Shampoo/Soap	9	8	1.13	7	7	1	-2	-1
Stupid	3	2	1.50	3	2	1.50	0	0
Washing Self	5	4	1.25	2	2	1	-3	-2
Opening/Closing Door	4	4	1	3	3	1	-1	-1
Towel Access	4	3	1.33	2	2	1	-2	-1
Sensation - Temperature Control	0	0	0	4	4	1	4	4
Heat/Steam - Breathing	3	3	1	3	3	1	0	0
Memory/Cognitive	2	2	1	1	1	1	-1	-1
Bump/Bang/Knock	4	2	2.00	0	0	0	-4	-2
Alert/Call for Help	3	3	1	2	2	1	-1	-1
Caregiver/Two People	2	2	1	1	1	1	-1	-1
Emotions	4	2	2.00	0	0	0	-4	-2
Undressing	2	2	1	0	0	0	-2	-2
Bladder and Bowel Control	3	3	1	1	1	1	-2	-2
Cleaning Shower	1	1	1	2	2	1	1	1
Seizures	1	1	1	0	0	0	-1	-1
Hearing	1	1	1	2	2	1	1	1
Total	191			141			-16	-10

Class C student pre and post test responses categorized by type

	Instructor D							
	Pre Test			Post Test			Differences	
	# Resp	# Stu	Resp/Stu	# Resp	# Stu	Resp/Stu	Response	Student
Access - Entry/Exit	23	13	1.77	17	12	1.42	-6	-1
Blind/Low Vision	7	5	1.40	13	7	1.86	6	2
Dexterity - Control Manipulation	7	7	1	9	7	1.29	2	0
Balance/Stability	12	8	1.50	14	9	1.56	2	1
Slipping/Falling	9	8	1.13	11	8	1.38	2	0
Bending / Reach - Controls and Shower	15	8	1.88	14	11	1.27	-1	3
Seating/Transfer	6	6	1	12	9	1.33	6	3
Cognitive - Understanding Controls	13	7	1.86	9	7	1.29	-4	0
Space/Mobility	7	5	1.40	3	3	1	-4	-2
Control Water Direction	11	7	1.57	1	1	1	-10	-6
Reach and Use - Shampoo/Soap	1	1	1	2	2	1	1	1
Stupid	6	3	2.00	1	1	1	-5	-2
Washing Self	4	4	1	1	1	1	-3	-3
Opening/Closing Door	4	4	1	3	3	1	-1	-1
Towel Access	4	3	1.33	1	1	1	-3	-2
Sensation - Temperature Control	6	5	1.20	3	3	1	-3	-2
Heat/Steam - Breathing	3	2	1.50	1	1	1	-2	-1
Memory/Cognitive	4	2	2.00	0	0	0	-4	-2
Bump/Bang/Knock	2	2	1	0	0	0	-2	-2
Alert/Call for Help	2	1	2.00	1	1	1	-1	0
Caregiver/Two People	3	3	1	1	1	1	-2	-2
Emotions	1	1	1	0	0	0	-1	-1
Undressing	2	2	1	0	0	0	-2	-2
Bladder and Bowel Control	0	0	0	0	0	0	0	0
Cleaning Shower	1	1	1	0	0	0	-1	-1
Seizures	1	1	1	1	1	1	0	0
Hearing	0	0	0	3	1	3.00	3	1
Total	154			121			-22	-18

Class D student pre and post test responses categorized by type

	Totals					
	Responses			Students		
	Pre	Post	Diff	Pre	Post	Diff
Access - Entry/Exit	49	39	-10	22	23	1
Blind/Low Vision	32	21	-11	14	14	0
Dexterity - Control Manipulation	26	21	-5	15	14	-1
Balance/Stability	24	25	1	14	17	3
Slipping/Falling	23	21	-2	17	16	-1
Bending / Reach - Controls and Shower	22	27	5	14	19	5
Seating/Transfer	22	24	2	13	18	5
Cognitive - Understanding Controls	22	22	0	12	15	3
Space/Mobility	17	6	-11	11	5	-6
Control Water Direction	13	5	-8	9	2	-7
Reach and Use - Shampoo/Soap	10	9	-1	9	9	0
Stupid	9	4	-5	5	3	-2
Washing Self	9	3	-6	8	3	-5
Opening/Closing Door	8	6	-2	8	6	-2
Towel Access	8	3	-5	6	3	-3
Sensation - Temperature Control	6	7	1	5	7	2
Heat/Steam - Breathing	6	4	-2	5	4	-1
Memory/Cognitive	6	1	-5	4	1	-3
Bump/Bang/Knock	6	0	-6	4	0	-4
Alert/Call for Help	5	3	-2	4	3	-1
Caregiver/Two People	5	2	-3	5	2	-3
Emotions	5	0	-5	3	0	-3
Undressing	4	0	-4	4	0	-4
Bladder and Bowel Control	3	1	-2	3	1	-2
Cleaning Shower	2	2	0	2	2	0
Seizures	2	1	-1	2	1	-1
Hearing	1	5	4	1	3	2
Total	345	262	-38	64	36	-28

Student pre and post test responses categorized by type

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